

A photograph of a forest scene with a stream. In the foreground, there are large logs and branches. A utility vehicle, possibly a bucket truck, is partially visible in the middle ground, with its bucket extended towards a utility pole. The background shows a dense forest of tall, thin trees.

For City Council
Consent Resolution Adoption
January 9, 2012

HAZARD MITIGATION PLAN 2011

City of Concord,
New Hampshire

ADOPTED BY THE CONCORD CITY COUNCIL
JANUARY 9, 2012

FEMA APPROVED _____, 2012

HAZARD MITIGATION PLAN 2011

City of Concord, New Hampshire

Adopted **January 9, 2012**
FEMA APPROVED _____, 2012

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NOTE to READER:

The Asset and Risk Identification Map Series and the Potential Hazards and Losses Map Series

are provided on CD at the back of this plan.

CERTIFICATE OF ADOPTION

CITY OF CONCORD, NEW HAMPSHIRE
CITY COUNCIL
A RESOLUTION ADOPTING THE CONCORD HAZARD MITIGATION PLAN 2011

January 9, 2012

WHEREAS, the City of Concord received assistance from the Central New Hampshire Regional Planning Commission, through funding provided by the New Hampshire Homeland Security and Emergency Management, to prepare the Concord Hazard Mitigation Plan 2011; and

WHEREAS, several public planning meetings were held between October 2010 and August 2011 regarding the development and review of the Concord Hazard Mitigation Plan 2011; and

WHEREAS, the Concord Hazard Mitigation Plan 2011 contains several potential future projects to mitigate hazard damage in the City of Concord; and

WHEREAS, a duly-noticed public meeting was held by the Concord City Council on January 9, 2012 to formally approve and adopt the Concord Hazard Mitigation Plan 2011.

NOW, THEREFORE BE IT RESOLVED that the Concord City Council adopts the Concord Hazard Mitigation Plan 2011.

ADOPTED AND SIGNED this 9th day of January, 2012.

Thomas J. Aspell, Jr., City Manager

ATTEST

Janice Bonenfant, City Clerk

ACKNOWLEDGEMENTS

The 2011 Hazard Mitigation Plan Update Task Force met from October 2010 through August 2011 to develop this Plan:

- Chief Dan Andrus, Fire Department
- Philip Bilodeau, General Services
- Lieutenant Ian Holm, Fire Department
- Sergeant Michael Pearl, Police Department
- Yingchun Zhou, Engineering/GIS

The following Central New Hampshire Regional Planning Commission staff contributed to the development of the Hazard Mitigation Plan:

- Stephanie Alexander, Senior Planner (Plan development)
- Vanessa Goold, Principal Planner (site mapping)

Other individuals contributed to the development of this Plan:

- Stephen Henninger, Community Development
- Charles Lloyd, Unitil
- Diane Morin, GIS Analyst (Map development)
- Edward Roberge, Engineering/GIS
- Nancy St. Laurent, NH Homeland Security and Emergency Management

EXECUTIVE SUMMARY

The City of Concord developed this Hazard Mitigation Plan in an effort to reduce future losses of life and property resulting from natural, human-made, and technological disasters. It is impossible to predict exactly when or where these disasters will occur, or the extent to which they will affect us. However with careful planning and collaboration among public agencies, private sector organizations, and citizens, it is possible to minimize the losses that can result from these disasters.

Hazard mitigation is a collaborative process which identifies community assets, considers specific vulnerabilities and identifies, where possible, mitigation strategies to help reduce disaster impact. Hazard mitigation is the responsibility of individuals, private business and industry, and federal, state and local government.

The Federal Disaster Mitigation Act of 2000 requires all municipalities in the United States to develop and adopt a hazard mitigation plan in order to continue to be eligible for funding through the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program and Pre-Disaster Mitigation Grant Program. This plan addresses natural hazards such as flooding, severe storms, and wildfires. This plan also considers technological hazards and hazards caused by human intervention, both intentionally and unintentionally. Additional information on hazard identification can be found in **CHAPTER 2. HAZARD IDENTIFICATION**, which identifies over three dozen types of hazards which are feasible to occur within the City of Concord. Along with identifying these hazards, past experiences of similar problems are documented with details when available.

Subsequent chapters identify specific locations, properties, and infrastructure vulnerable to one or more hazard. Asset vulnerabilities are explored along with possible mitigation strategies. No single location is vulnerable to one single hazard. Additionally, a single hazard may be complicated by ensuing hazards. For example, a large snow storm within a short time period (natural hazard) is further complicated by power outages within the affected area (technological hazard). Not all information collected and evaluated is available to the general public.

CHAPTER 11. PLAN MONITORING, EVALUATING, AND UPDATING reminds us that the completion of this document is merely the first step in a continuous process of identifying, evaluating and preparing for emergencies. From a budgetary standpoint, this continuous dialogue will take place annually as outlined in **Table 18, Future Meeting Schedule**. Ultimately, financial participation with any mitigation strategy rests with the City Council through the annual budgetary process. Additionally, the plan as a whole is required to be updated every five years.

Finally, a plan is only as good as the continuous preparation and mitigation that follows it. All citizens share a responsibility to plan and practice their actions in an emergency. Recent experience has shown that we all play an active role in our response to disaster. We ask that you read the plan and share it with family members and friends. A community that is prepared will respond properly to a disaster rather than react inappropriately.

CHAPTER 1. INTRODUCTION

2011 PLAN UPDATE

The City's Hazard Mitigation Plan Update Task Force reformed in late 2010 to develop an updated Hazard Mitigation Plan. A brief community demographics section and a recent hazard events section were added. Compared to the 2005-2006 plan process, expanded public participation steps were taken, and a similar Plan development procedure was used as documented in the revised methodology section, which was clarified. A new **Plan Dates** section was added.

BACKGROUND

The Hazard Mitigation Plan for Concord is intended to provide information in the event of a natural disaster, to raise awareness of the vulnerability of facilities and structures of Concord to such disasters, and to provide measures to help offset the damages of a future disaster.

In 2000, the President enacted the Disaster Mitigation Act 2000 (DMA) which requires states and municipalities to have local natural hazard mitigation plans in place in order to be eligible for disaster funding programs such as Hazard Mitigation Grant Program, Flood Mitigation Assistance Program, and Pre-Disaster Mitigation Program. New Hampshire is awarded funds based upon the completeness of its State Plan and upon the number of local plans in place.

As a result of the DMA, funding was provided to state offices of emergency management to produce local hazard mitigation plans. In April 2007, Concord received Hazard Mitigation Plan approval from FEMA. To remain in compliance with the DMA, the City is required to submit for FEMA approval a revised Hazard Mitigation Plan every five years.

In accordance with the Disaster Mitigation Act 2000 and the Local Multi-Hazard Mitigation Planning Guidance released by FEMA effective July 1, 2008, this plan has been revised to reflect the most recent information obtained through the State. The planning effort of the City is a regular process and this Plan is considered to be a "living document." The Plan is available through the Concord City Hall.

In 2006, a Mitigation Planning Task Force was established which guided the development of the Plan. The City Fire Department, Police Department, City Council, Community Development Department, General Services Department, and City Administration were among those appointed to the Task Force. By advertising the public process for this plan via news press releases and colorful, detailed flyers posted around the community, all interests had an opportunity to be present and participate in the meetings.

The 2011 Concord Hazard Mitigation Plan Update Task Force was established which guided the development of the Plan. The City's Fire Department, Police Department, Engineering/GIS Department, General Services, City Council, Public Safety Advisory Board formed the Task Force. The Concord Monitor, Friends Program, YMCA, Unitil, NH Association for the Blind, Main Street Concord, Greater Concord Chamber of Commerce, St. Paul's School, Concord School District and Merrimack Valley School District were notified and invited to participate in the process.

The Central NH Regional Planning Commission, of which Concord is a member, also contributed to the development of this Plan. By advertising the public process for this plan via news press releases to the Concord Monitor and on the City's website and colorful meeting announcements posted around the community, all interests had an opportunity to be present and to participate in the meetings. In addition to local community participation, letters were sent to the Emergency Management Directors of the neighboring communities of Bow, Hopkinton, Boscawen, Canterbury, Loudon, Pembroke, and Webster requesting their participation.

COMMUNITY DEMOGRAPHICS

The City of Concord is located in the middle of Merrimack County in central New Hampshire. The City of **42,695** is bordered by the Towns of Webster, Boscawen, and Canterbury to the north, Loudon, Chichester, and Pembroke to the east, Bow to the south, and Hopkinton to the west. The total land area contained within Concord is 64 square miles, one of the largest in the south-central part of the state. In 2010, about **52%** of Concord was undeveloped land, with **28%** single family/duplex residential, and nearly **5%** commercial/industrial. Vacant land has interestingly increased since 2004, from the 2007 Hazard Mitigation Plan. Institutional land, including State and Federal office complexes, was at nearly **4%** in 2010.

Concord is small city with both high-density residential communities and low-density rural housing, with some large commercial and industrial activities. The 2010 Census population is **42,695** residents and **18,852** housing units. Between the 2000 Census and the 2010, population increased **5%** and housing by **12%**. Population density is now at **668** people per square mile, up from **636** people in 2000.

New construction permits have decreased since the 2007 Plan. In 2010, **45** permits were issued, while in 2004 **219** permits were issued. This follows a region-wide trend toward fewer developments and homes being built. Areas of high density in the City remain the Main Street/Downtown area, Loudon Road/Concord Heights, and Route 3 (Fisherville Road)/Penacook. Nearly **50** apartment complexes and multi-unit housing are located in Concord, in addition to about **10** manufactured housing parks and multiple senior housing facilities. Further information on the demographics of the community is found in **CHAPTER 5. DEMOGRAPHICS**.

RECENT HAZARD EVENTS IN CONCORD

Since the City's initial writing of this Plan in 2006, the City has been affected by several natural disasters. Flooding in October 2005, the 2006 Mother's Day Flood, Flooding in April 2007, the 2008 Ice Storm, and the Flooding and High Wind Events of 2010 washed out roads, ripped down powerlines, snapped off trees, blocked roadways, iced over the roads, and sequestered residents in their homes for many days. While these events severely disrupted the community, their impact was relatively mild as few injuries were reported. FEMA provided funding to the City for cleanup, road repairs, tree and brush cutting, and generator acquisition and installation.

Flooding in October 2005: The EOC was activated. FEMA funds were obtained to pump waste water from storage tanks. FEMA funds were also obtained to repair roads and shoulders of Elm Street and Farmwood Road that had been washed out by the rains.

Mother's Day Flood 2006: FEMA funds were obtained for repairs to roads and shoulders washed out by the rains of May 13 through May 26, 2006. A list of specific streets and damages is available in **CHAPTER 12. APPENDIX** in **Table 19**.

Flooding in April 2007: FEMA funds were obtained for plowing and salting streets, and then repairs to roads and shoulders that had been washed out by the rains of April 15 through April 16, 2007.

Ice Storm in December 2008: A large amount of FEMA funds were received for snow and ice removal from streets and sidewalks as well as removing trees and limbs off streets when they came down with ice on them.

Flooding and High Wind Events in February & March 2010: Unil opened their Emergency Operations Center (EOC), and the Concord Fire Department EOC opened for hours. A large amount of FEMA funds were received for removing trees and limbs off streets immediately after the wind storm to open streets up or to place barricades to close streets when power lines were on the ground until the power company was able to remove the downed lines. The FEMA funds also paid for picking up debris from streets, sidewalks, parks, cemeteries, and the public golf course for several weeks after the storm came through.

Hazard events are occurring with greater frequency. Having this approved Hazard Mitigation Plan permitted the City to receive disaster funding for these and other events. The City of Concord acknowledges the necessity for maintaining an updated plan, and has produced this revision in 2011, developing an all-hazard plan in the process. The importance of having a relevant, useful plan filled with institutional knowledge of past events and lists of assets along with a solid Action Plan is realized. As new hazards impact the community, they will be documented within the Hazard Mitigation Plan.

GOALS OF THE PLAN

The overall goal of this Plan is to prevent future life and property losses caused by natural, human, and technological hazard events before they occur (*see the Glossary in CHAPTER 12. APPENDIX for hazard definitions*).

The general goals of the Hazard Mitigation Plan for Concord are:

- To identify natural hazards that may impact the City;
such as floods, hurricanes, severe winter weather, earthquakes, wildfire, and drought
- To identify technological hazards that may impact the City;
such as fires and explosions, business interruption, transportation accidents, etc.
- To identify human hazards that may impact the City;
such as sabotage, hostage situations, enemy attack, special events, etc.
- To identify risks from these hazards; and
such as where the events are likely to occur and what the damage might be
- To identify resources or techniques available to help lessen the impact of hazard events.
such as critical facilities protection and ordinance / regulation revision

This Hazard Mitigation Plan accomplishes these goals through numerous Chapters that were developed, evaluated, prioritized, and updated. A number of relevant objectives have been stated, similar to the State of NH's hazard mitigation goals, which further specify the aims of Concord's Hazard Mitigation Plan. They are located within **CHAPTER 7. LOCAL HAZARD MITIGATION OBJECTIVES**.

METHODOLOGY

The Hazard Mitigation Plan was developed over several months with a bevy of volunteers and City staff members. The methodology for Plan development is summarized in this section.

Meetings and Duties

The Hazard Mitigation Task Force met on October 13, December 15, 2010 and March 23, and June 15, 2011 at regular meetings and on October 27, November 17, June 12, April 13, and May 18 at Work Sessions. The Agendas and preparatory meeting materials were prepared by Central New Hampshire Regional Planning Commission (CNHRPC). The Agendas, attendance sheets, and meeting summaries are included in **CHAPTER 12. APPENDIX** of the Plan.

For each meeting, CNHRPC prepared attendance sheets and meeting summaries for the Hazard Mitigation Plan Update Task Force, and during Work Sessions developed information for incorporation into the Plan. City staff and volunteers documented their time on match tracking forms. CNHRPC staff facilitated the regular Task Force meetings and the Work Sessions.

Opportunity for Public Participation

Invitations to the introductory meeting were mailed to abutting communities' emergency management directors, local businesses, the School District, and non-profits such as the Concord Monitor, Friends Program, YMCA, Unitil, NH Association for the Blind, Main Street Concord, Greater Concord Chamber of Commerce, St. Paul's School, Concord School District and Merrimack Valley School District. Press releases about the Hazard Mitigation Plan and its process were provided to the Concord Monitor. Poster flyers, agendas, and the meeting schedule were posted at the City Clerk's Office, and the announcements were posted on the City's website. The purpose was to solicit public input into the Plan development. Copies of publicity for the Plan are included in **CHAPTER 12. APPENDIX**.

Overall Tasks

At meetings, information on the Chapters was collected by CNHRPC during discussions among Task Force members. The new and updated information was described in each Chapter under the **2011 PLAN UPDATE** section. Revisions were provided by the City after the Work Sessions. In between meetings, City staff and volunteers and CNHRPC staff researched and collected information for the Chapters, and CNHRPC incorporated changes and rewrote sections as appropriate. The Chapters were also updated by revising the document to 2008 FEMA Mitigation Planning guidelines. Maps were reviewed and revised by the Task Force, the data layers were updated by CNHRPC, and the new maps were produced by the City's GIS Department.

Completion of the Plan

On July 1, 2011, the Task Force made a final draft of this Plan available to City Departments for review and comment. Included with the draft was a support letter which was signed by Department heads to acknowledge that they have read and support the document. The support letters are included in **CHAPTER 12. APPENDIX**.

On August 10, 2011, the Task Force held a Public Information Meeting. The purpose of the meeting was to obtain review and comment from the public for the Plan. The meeting announcement was sent to the Concord Monitor. Poster flyers were posted at the City Clerk's Office, and the announcements were posted on the City's website. Copies of this Plan were made available for review at the City Hall, Police Department, and were posted on the City website. Copies of publicity and flyers for the Plan are included in **CHAPTER 12. APPENDIX**.

On September 16, 2011, copies of this Plan were submitted to the NH Homeland Security and Emergency Management and FEMA for FEMA's approval of the Concord Hazard Mitigation Plan. On November 28, 2011, Concord received an **Approvable Pending Adoption (APA)** notification from FEMA, which approved the draft plan without revisions, subject to adoption by the local governing body, the City Council.

On January 9, 2012, the Concord City Council held a duly noticed public meeting to adopt the Hazard Mitigation Plan by consent resolution. Copies were made available at the City Clerk's Office and the City Library for public review on December 23, 2011, and the materials were posted on the City's website. Copies of the press release and the adoption meeting invitation flyer are included in **CHAPTER 12. APPENDIX**.

On _____, Concord received a **Letter of Approval** from FEMA, with the Plan approval granted on _____, 2012. The next Hazard Mitigation Plan update is due five (5) years from this date of approval, on _____.

Final Plan Dates

The following is a summary of the required dates which guide the adoption and update of the Concord Hazard Mitigation Plan. Included is the history of the original Plan approval and expiration dates.

Original 2007 Hazard Mitigation Plan

Date of Original FEMA Approval: April 6, 2007

Plan Expiration Date: April 6, 2012

Updated 2011 Hazard Mitigation Plan

Date of Adoption by Concord City Council: **January 9, 2012**

Date of FEMA Updated Approval:

Plan Expiration Date:

CHAPTER 2. HAZARD IDENTIFICATION

2011 PLAN UPDATE

Based on FEMA's recommendation that plans consider technological and human hazards, this Chapter developed new sections to discuss specific hazard events for both categories. Natural hazard categories were modified, and new Concord events added. The probability, severity, and overall risk criteria for each hazard were developed and evaluated on a point-system basis.

INTRODUCTION

The State of New Hampshire's 2007 Natural Hazard Mitigation Plan recommends that municipalities examine the following natural hazards. Two hazards, coastal flooding and snow avalanche, are not discussed in Concord's Plan. Other natural hazards, including rapid pack snow melt, river ice jams, stream bank erosion and scouring, debris-impacted infrastructure, and biological hazards have been incorporated into this Plan.

Technological hazards including hazardous materials spills, transportation accidents, and power utility failure have the ability to impact Concord. Other technological hazards considered include explosion, building collapse, communication systems interruption, and more. Human hazard events in Concord could be sabotage, terrorism, hostage situations, civil disturbance, etc, and have also been addressed.

This Chapter seeks to identify hazard events of all three types (natural, technological, and human) that may have occurred within the City and the surrounding area. Narrative descriptions are provided, and additional research has uncovered historical data and data which may indirectly refer to Concord from a county- or state-wide context; all of the findings are then summarized in tabular form. The potential for such hazards to recur in Concord is offered as well as their likely severity.

Many of these 39 hazards discussed will pose little to no threat to the City. The City wanted to acknowledge their possibility as opposed to focusing on simply three or four top hazards which will certainly impact the community. Using this broad vision allows Concord to contemplate the impact of a variety of hazards and design emergency planning programs as appropriate. Only the most predominant hazards, or even multiple hazards, will have mitigation actions designed to try to reduce the hazards' impact. These are discussed in **CHAPTER 9. NEWLY IDENTIFIED MITIGATION ACTIONS** and prioritized in **CHAPTER 10. EVALUATION AND IMPLEMENTATION OF ACTIONS**.

RATINGS OF PROBABILITY, SEVERITY, AND RISK

Descriptions of how the hazards are rated follow within this section. Probability of occurrence and severity of the event are estimated using a number system answering questions which answer High (3), Moderate (2), and Low (1). A zero (0) score meant that the hazard would not impact the City in the next 25 years. The ranges established for the average to determine severity were: High = >2.5, Moderate = 1.6 - 2.5, and Low = <1.6. The overall risk is a numeric indication developed by multiplying the total numbers of the probability and the severity.

Probability of Occurrence

An adjective description (High, Moderate, or Low) of the probability of a hazard impacting the City of Concord within the next 25 years. Probability is based on a limited objective appraisal of a hazard's probability using information provided by relevant sources, observations and trends.

- **High:** There is great likelihood that a hazardous event will occur within the next 25 years. Score = 3
- **Moderate:** There is moderate likelihood that a hazardous event will occur within the next 25 years. Score = 2
- **Low:** There is little likelihood that a hazardous event will occur within the next 25 years. Score = 1

Severity

An adjective description (High, Moderate, or Low) of the potential impact a hazard could have on Concord. It is the ratio of population, property, commerce, infrastructure and services at risk relative to the entire City. Severity is an estimate generally based on a hazard's characteristics. Averages were calculated for the population, property, and commerce components and were used to calculate overall risk.

- **High:** The total population, property, commerce, infrastructure and services of the City are uniformly exposed to the effects of a hazard of potentially great magnitude. In a worst case scenario there could be a disaster of major to catastrophic proportions. Score = 3
- **Moderate:** The total population, property, commerce, infrastructure and services of the City are exposed to the effects of a hazard of moderate influence; or
 - The total population, property, commerce, infrastructure and services of the City are exposed to the effects of a hazard, but not all to the same degree; or
 - An important segment of population, property, commerce, infrastructure or service is exposed to the effects of a hazard. In a worst case scenario there could be a disaster of moderate to major, though not catastrophic, proportions. Score = 2
- **Low:** A limited area or segment of population, property, commerce, infrastructure or service is exposed to the effects of a hazard. In a worst case scenario there could be a disaster of minor to moderate proportions. Score = 1

Overall Risk

The risk number is one, which can help the community weigh the hazards against one another to determine which hazard is most detrimental to the community. This is calculated by multiplying the Probability of Occurrence score by the average (of human, property, and business impacts) of the Severity score. The highest numeric score is 9.0, which indicates that the overall risk is the greatest.

NATURAL HAZARD EVENTS IN CONCORD

Hazard events were researched using a wide variety of sources for the original 2007 Concord Hazard Mitigation Plan. Sources and techniques included interviewing local community members, researching City Histories and related documents, and collecting information from the State of New Hampshire Hazard Mitigation Plan and from governmental or non-profit websites. In 2011, the Hazard Mitigation Plan Revision Update Task Force reviewed the information and added new events to the existing lists.

Within Concord, the risk of each hazard has been identified as a High, Moderate, or Low Probability of occurrence based on past and potential events as indicated in the following Chapters and as mapped on *Map 1: Potential Hazards* and *Map 2: Past Hazards*. Potential severity of each hazard based upon the same assumptions through the research and indicated by the High, Moderate, and Low scale is also provided.

Flooding

Floods are defined as a temporary overflow of water onto lands that are not normally covered by water. Flooding results from the overflow of major rivers and tributaries, storm surges, and/or inadequate local drainage. Floods can cause loss of life, property damage, crop/livestock damage, and water supply contamination. Floods can also disrupt travel routes on roads and bridges.

CONCORD FLOODING EVENTS	
Probability -	High
Severity -	High
Overall Risk -	8.0

Floodplains are usually located in lowlands near rivers, and flood on a regular basis. The term 100-year flood does not mean that a flood will occur once every 100 years. It is a statement of probability that scientists and engineers use to describe how one flood compares to others that are likely to occur. It is more accurate to use the phrase "1% annual chance flood". What it means is that there is a 1% chance of a flood of that size happening in any year.

Inland floods are most likely to occur in the spring due to the increase in rainfall and melting of snow; however, floods can occur at any time of year. A sudden thaw in the winter or a major downpour in the summer can cause flooding because there is suddenly a lot of water in one place with nowhere to go.

Second only to winter storms, riverine flooding is the most common natural disaster to impact New Hampshire. Floods are a common and costly hazard. They are most likely to occur in the spring due to the increase in rainfall and the melting of snow. However, they can occur anytime of the year as a result of heavy rains, hurricane, or a Nor'easter.

Area Events

Numerous flooding events in recent history have occurred in the State, region, and the local area surrounding Concord that may have also had an impact on the City.

- March 11-21, 1936

In March, 1936, heavy snowfall totals, heavy rains, and warm weather all at the same time combined to impact Concord and all of New England. These floods killed 24 people, caused \$133,000,000 in damage, and made 77,000 people homeless throughout New England.

The New Hampshire State Board of Health requested health officers throughout New Hampshire to issue warnings that all water should be boiled before it was used (*The Union Leader, March 16, 1936*). Many private wells throughout the state were flooded; possibly, some residents of Concord had to boil their water before use.

- September 21, 1938

New Hampshire and Southern New England were affected by the hurricane, including experiencing flooding events. It is unknown how Concord was affected.

- Spring, 1976

The entire region experienced spring flooding. It is unknown how Concord was affected.

- July 1986 - August 10, 1986
During severe summer storms with heavy rains, tornadoes, flash floods, and severe winds, the road network was impacted statewide. It is unknown how Concord was affected.
- April 16, 1987
Flooding caused by snowmelt and intense rain was felt in seven counties, including Merrimack County. Declared FEMA Disaster #789, nearly \$5 million in damage occurred. It is unknown how Concord was affected. *NH Bureau of Emergency Management*
- August 7-11, 1990 (see also [Hurricanes and Severe Storms](#))
Flooding caused by a series of storm events with moderate to heavy rains impacted eight counties, including Merrimack County. Declared FEMA Disaster #876, over \$2 million in damage occurred. It is unknown how Concord was affected. *NH Bureau of Emergency Management*
- October 1996 (see also [Hurricanes and Severe Storms](#))
Six counties experienced flooding due to heavy rains in FEMA Disaster Declaration #1144, causing \$2.3 million dollars in damage. It is unknown how Concord was affected. *NH Bureau of Emergency Management*
- July 1998 (see also [Hurricanes and Severe Storms](#))
Flooding from severe storms in six counties, including Merrimack County, resulted in \$3.4 million in damages in FEMA Disaster #1231. It is unknown how Concord was affected. *NH Bureau of Emergency Management*
- October 7-18, 2005
Extensive flooding caused by severe storms impacted five counties in FEMA Disaster Declaration #1610. It is unknown how Concord was affected. *NH Bureau of Emergency Management and FEMA*
- May 13-17, 2006
Extensive flooding caused by severe storms impacted seven counties in FEMA Disaster Declaration #1643. The USGS recorded the highest flows on record for several rivers including the Contoocook River in Davisville village, Soucook in Concord, and Piscataquog in Goffstown. *NH Homeland Security-Emergency Management*
- April 13-27, 2007
Extensive flooding caused by severe storms impacted seven counties in FEMA Disaster Declaration #1695. *NH Homeland Security-Emergency Management*
- Severe Storms and Flooding, September 6-7, 2008
FEMA-1799-DR. In Merrimack County, damage to road systems by flooding totaled the equivalent of \$1.48 per capita (146,455 people in 2010) for town reimbursement. Hillsborough County's damage was much higher at \$6.90 per capita (400,721 people in 2010). *fema.gov*

- Severe Storms and Flooding, March 14-31, 2010
FEMA-1913-DR. Severe storms and flooding occurred over a two-week period which caused damage to roads and bridges. In Merrimack County, the reimbursement to towns for repair was \$0.28 per capita (146,455 people in 2010), and in Hillsborough County damages reimbursed were \$1.80 per capita (400,721 people in 2010). *fema.gov*

Events in Concord

These hazard events were found to have directly impacted Concord.

- April 21-24, 1852
Merrimack River was at its highest stream stage in 70 years. *NH Bureau of Emergency Management*
- March 11-21, 1936
In Concord, the flooding caused by heavy snowfall totals, heavy rains, warm weather, and run-off from melting snow overflowed the rivers and caused severe damage.

The train tracks running through Concord were covered, preventing passage. Country roads throughout the City were damaged, many being completely washed out. More than 60 Concord families had their homes isolated by floods and were forced to evacuate with the aid of a boat. It took more than seven days before roads were open again. *NH Bureau of Emergency Management, Northeast States Emergency Consortium, Concord Monitor March 1936*

- Hurricane of 1938 - September 21, 1938 (see also Hurricanes and Severe Storms)
The hurricane of September 1938 impacted Concord with flooding and high winds. Thirteen people died in New Hampshire; one man was killed in Concord as a cause of high winds. This was the worst hurricane to ever strike New England, resulting in 564 deaths and over 1,700 injuries.

In Concord, areas along the Merrimack River experienced heavy flooding. The Merrimack River rose to 11 feet over its flood stage. Roads throughout Concord were washed out, making them impossible to pass. Concord became isolated from the State because all roads leading out of Concord were either flooded or obstructed by trees. Rollins Park in the South End was flooded. *NH Bureau of Emergency Management, Concord Monitor September 1938*

- Other Hurricanes (see also Hurricanes and Severe Storms)
Several other hurricanes have impacted Concord, includes Hurricanes Carol (September, 1954), Donna (September, 1960), Gloria (September, 1985), and Bob (August, 1991), but their impact was not severe. Some heavy rains occurred during these events.
- August 12, 2003
Thirty residential properties were damaged by flooding in the Penacook, West Concord, and Riverhill sections of the City. Damages included flooded basements and washed-out driveways. The Fire Department performed an assessment of damages and provided them to FEMA, which did not reimburse for the damage. It is thought that none of the properties had flood insurance. *Concord Fire Department*

- October 7-18, 2005

The EOC was activated. FEMA funds were obtained to pump waste water from storage tanks. FEMA funds were also obtained to repair roads and shoulders of Elm Street and Farmwood Road that had been washed out by the rains. *Concord Hazard Mitigation Task Force 2011*

- May 13 - 17, 2006

The City and surrounding area experienced record rainfall within a 72 hour period. This caused local streams and rivers to overflow their banks resulting in localized and area flooding. This impacted residences, businesses and various transportation roadways throughout the City. Concord Steam, a locally owned public utility, was forced to shut down its operations for the first time. It reopened within 48 hours.

FEMA funds were obtained for repairs to roads and shoulders washed out by the rains of May 13 through May 26, 2006. *Concord Hazard Mitigation Task Force 2011*

- April 13-27, 2007

FEMA funds were obtained for plowing and salting streets, and then repairs to roads and shoulders that had been washed out by the rains of April 15 through April 16, 2007. *Concord Hazard Mitigation Task Force 2011*

Potential Future Hazards

Currently, there are **142** residential parcels with buildings and **98** non-residential parcels with buildings located within the 100-year floodplain in Concord (see **CHAPTER 4**). While living in a 100-year floodplain, there is a 26% chance of flood loss (*Northeast States Emergency Consortium*) during a 30-year mortgage period.

The likelihood of another flood in Concord is **High**. The City is susceptible to flooding because of the close proximity of the Merrimack River, Soucook River and Contoocook River. Homes near the Merrimack and Contoocook Rivers, especially in low-lying areas, are at risk. Other water systems, such as the Turkey River, Turkey Pond, Little Turkey Pond, Burnham Brook, Hayward Brook, Woods Brook, Snow's Brook, Hackett Brook, Hoit Road Marsh, Mill Brook, Bela Brook, Turree Brook, Bow Brook (May 2006), Millstream Brook (May 2006), and Rattlesnake Brook (May 2006) also are prone to flooding.

Areas which are susceptible to regular flooding include the Merrimack River's edge at the former Christian Mutual Building, along Shaw's Fort Eddy Road, the NHTI fields, at Hall Street in the Amoskeag Beverages area, and Long Meadow Drive manufactured housing park. St. Paul's School suffered tremendous flooding damage during the Mother's Day flood from the Turkey River. The School has undertaken measures to lessen future damage.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Hurricanes and Severe Storms

A hurricane is a tropical cyclone in which winds reach speeds of 74 miles per hour or more and blow in a large spiral around a relatively calm center. Flooding is often caused from the coastal storm surge of the ocean and torrential rains, both of which accompany the storm. These floods can result in loss of lives and property.

CONCORD HURRICANES AND SEVERE STORMS EVENTS	
Probability -	High
Severity -	Moderate
Overall Risk -	5.0

Area Events

Hurricane season begins on June 1 and continues through the end of November. August and September are the most active hurricane months. It is not uncommon for New England to be impacted by a hurricane more than once in a season. River and flooding due to heavy rains is a risk to Concord during hurricanes. Numerous hurricane events in recent history have occurred in the State, region, and the local area surrounding Concord that may have also had an impact on the City.

- August, 1635
A hurricane struck portions of New Hampshire in 1635. It is unknown if Concord was one of those areas. *NH Bureau of Emergency Management*
- October 18-19, 1778
Portions of New Hampshire experienced 40-75 mph winds. It is unknown if Concord was one of those areas. *NH Bureau of Emergency Management*
- October 9, 1804
A hurricane struck portions of New Hampshire in 1804. It is unknown if Concord was one of those areas. *NH Bureau of Emergency Management*
- September 23, 1815
Portions of New Hampshire experienced the effects of a hurricane in 1815. It is unknown if Concord was affected.
- September 8, 1869
Portions of New Hampshire experienced winds over 50 mph. It is unknown if Concord was one of those areas. *NH Bureau of Emergency Management*
- 1954 - 1991 Hurricanes Carol, Donna, Gloria, and Bob
Hurricanes on August 31, 1954 (Carol - tree and crop damage), April 12, 1960 (Donna - heavy flooding), September 27, 1985 (Gloria), and 1991 (Bob) impacted New Hampshire and southern New England. It is unknown how the events affected Concord. *NH Bureau of Emergency Management*
- July/August 1986
Severe summer storms with heavy rains, tornadoes, flash floods, and severe winds occurred in July/August 1986. These storms were a detriment to the road network Statewide. The impact in Concord is unknown. *NH Bureau of Emergency Management*

- August 7-11, 1990 (see also [Flooding](#))
A series of storm events with moderate to heavy rains occurred on August 7-11, caused flooding in eight counties, including Merrimack County, and resulted in a disaster declaration. The damage totaled \$2,297,777 for all counties. It is unknown how Concord was affected.
- October 1996 (see also [Flooding](#))
In October 1996, heavy rains caused flooding in six counties, including Merrimack County. A disaster was declared and damage totaled \$2,341,273 for all counties. It is unknown how Concord was affected.
- July 1998 (see also [Flooding](#))
Severe storms in July 1998 caused heavy flooding in six counties, including Merrimack County. Damages of \$3.4 million were incurred for all counties. It is unknown how Concord was affected.
- High Wind Event, February 25-March 1, 2010
In the Concord area, 21,000 Unitil customers were out of power at the peak outage period. *Unitil Energy Systems, 2010*
- Tropical Storm Irene, August 26-September 6, 2011
FEMA-4026-DR. Tropical Storm Irene impacted New Hampshire and damaged four counties, including Merrimack County at the equivalent of \$4.29 per capita (146,455 people in 2010). Damages to roads and bridges from flooding were the primary impact, but power outages from downed trees and lines also occurred during high winds throughout this week-long event. *fema.gov*

[Events in Concord](#)

These hazard events were found to have directly impacted Concord.

- August 10-17, 1870
Thunderstorms were reported as the "severest ever remembered" in Concord.
- July 30, 1889
Damage from this hurricane resulted from high winds, and struck portions of the State. In Concord's South End, uprooted trees were reported. *History of Concord, NH(J Lyford)*
- September 21, 1938
High winds and heavy flooding made this hurricane particularly severe. As reported in the Concord Monitor in September 1938, the hurricane was "the sharpest setback the state has ever experienced." Thirteen deaths and 1,363 families received assistance as a result of the hurricane. Other losses included smashed homes, crippled communication lines, blocked roads, and total direct losses of \$12,337,643 (1938 dollars). The timber industry was hit hard with the loss of trees. Damage to trees in New Hampshire was between \$2,000,000 and \$3,000,000. This was also the worst hurricane to ever strike New England, resulting in 564 deaths and over 17,000 injuries.

It was reported that for five hours, wind tore through the City and New England at hurricane velocity. In Concord, winds caused more than 1,000 electrical poles to

topple and were responsible for the death of one Concord man. In front of the State House, five century-old elms were knocked down. *NH Bureau of Emergency Management, Concord Monitor September 1938*

- June 26, 1950
A severe wind and rain storm, with 100-mile per hour gusts, ripped the roofs off of homes and businesses, felled hundreds of trees which blocked streets, and disrupted the electricity and telephone lines. The drive-in theater screen was flattened. Planes at the airport were toppled and severely damaged. It was "the worst storm since the 1938 hurricane." About \$1 million in damages was estimated. *Concord Daily Monitor*
- February 7, 1951
A severe rainstorm dropped more than two inches of rain on Concord. *Concord Daily Monitor*
- August 1968
A violent wind, hail, and thunderstorm uprooted trees and downed powerlines. Lightning struck the South Congregational Church steeple on Pleasant Street. A second storm later that month clocked winds at 71 miles per hour. *Concord Daily Monitor*
- July 27, 1979
The Concord Monitor reported a severe thunder and lightning storm lit skies, and uprooted trees. A small twister was sighted at Beaver Meadow. *Concord Daily Monitor*
- July 8, 1995
A severe thunderstorm caused several trees to blow down in Concord.
- July 15, 1995
A severe thunderstorm in Concord caused a large tree to fall over on top of a manufactured home.
- September 14, 1995
Thunderstorms ahead of a fast moving cold front produced damaging winds which downed trees and power lines, causing power outages in Concord.
- July 8, 1996
Wind from a severe thunderstorm knocked over trees in the Concord area. Hail was also reported in the area.
- High Wind Event, February 25-March 1, 2010
In Concord, 2,000 Unitil customers were out of power at the peak outage period. Unitil opened their emergency operations center, and the City opened their EOC for a few hours. Problems included Interference with electrical lines, trees down, and road blockages. Crews were out clearing the entire period. The Green Street community center shelter opened, hosting over 15 people at peak who were mostly from Canterbury. Multiple carbon monoxide issues from people using generators too close to their homes. Response time was 4-5 times what it normally was because of call volume and road closures. A large amount of FEMA funds were received for removing trees and limbs off streets immediately after the wind storm to open streets up and placing

barricades to close streets when power lines were down on them until the power company was able to take care of the downed lines. The costs are also from picking up debris from streets, sidewalks, parks, cemeteries, and the public golf course for several weeks after the storm came through. *Unitil Energy Systems and Concord Hazard Mitigation Task Force 2011*

Potential Future Hazards

The likelihood of severe storms impacting Concord with flooding is **High**. The close proximity to the Merrimack River, Contoocook River, and Soucook River makes areas of the City susceptible to flooding.

With the large square mile area of the City and high density of buildings in areas with higher elevation (such as Concord Heights, Penacook Street, West Parish Road, Carter Hill), the likelihood of damage from severe thunderstorms is **High**. Wind can cause Downtown power loss which would be economically disastrous, traffic light outage can cause accidents. Barricades are set out to help with traffic control. Hospitals and emergency care would be affected if the power failed.

All critical facilities would be vulnerable to hurricanes, including water treatment, sewer treatment, and pumping stations.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Rapid Snow Pack Melt

Warm temperatures and heavy rains cause rapid snowmelt. The water cannot yet percolate into the frozen ground and runs off into streets and waterways. Quickly melting snow coupled with moderate to heavy rains are prime conditions for flooding.

CONCORD RAPID SNOW PACK MELT EVENTS	
Probability -	Low
Severity -	Low
Overall Risk -	1.00

Area Events

Numerous rapid snow pack melt events in recent history have likely occurred in the State, region, and the local area surrounding Concord that may have also had an impact on the City.

- Spring, 1976
The entire region experienced spring flooding. It is unknown how Concord was affected. *NH Bureau of Emergency Management*
- March 14, 1977
With the peak record of the Soucook River, areas experienced flooding in area communities. It is unknown how Concord was affected. *NH Bureau of Emergency Management*
- April 16, 1987 (see also [Flooding](#))
Caused by rapid snowmelt and intense rain, statewide the damage totaled nearly \$5 million. It is unknown how Concord was affected.

Events in Concord

These hazard events were found to have directly impacted Concord.

- March 11-21, 1936
During the March Floods of 1936, an ice jam occurred in the Merrimack River and resulted in road flooding.
- April 1969
The Concord Daily Monitor regularly reported lowland flooding from the Merrimack River due to rapid pack snowmelt. The Bridge Street level reading was 9' 11", and at 11'3" Fort Eddy would be flooded. Evacuation information was sought for East and West Portsmouth Streets, Foundry Street, and Eastman Street.

Potential Future Hazards

Nearly all locations in Concord could be subject to this type of flooding. Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites. Most of the flooding area is away from residential except for Fort Eddy Road, and any facilities along the bank of the Merrimack River. The Soucook River on North Pembroke Road may be susceptible on the west side of the river.

River Ice Jams

Rising waters in early spring often break ice into chunks, which float downstream and often pile up, causing flooding. Small rivers and streams pose special flooding risks because they are easily blocked by jams. Ice in riverbeds and against structures presents significant flooding threats to bridges, roads, and the surrounding lands.

CONCORD RIVER ICE JAMS EVENTS	
Probability -	Moderate
Severity -	Low
Overall Risk -	2.00

Area Events

Numerous ice jam events in recent history have likely occurred in the State, region, and the local area surrounding Concord that may have also had an impact on the City.

- March 14, 1977
In the State, an ice jam caused major disruption to the road network as a result of road washouts. The specific location is unknown. It is unknown how Concord was affected.

Events in Concord

These hazard events were found to have directly impacted Concord.

- April 12, 1812
Ice chunks carried 100 feet of a Concord bridge downstream on the Merrimack River. *History of Concord (Bouton)*
- March 12, 1936
As a result of heavy snowfall totals, heavy rains, and warm weather, ice chunks jammed up the Contoocook River. *US Army Corps of Engineers NH Ice Jams Database*
- April 3, 1959
As reported by the US Army Corps of Engineers, "Maximum annual gage height of 12.03 feet, affected by backwater from ice, reported at USGS gage Soucook River near Concord, on April 3, 1959." *US Army Corps of Engineers NH Ice Jams Database*
- March 19, 1968
As reported by the US Army Corps of Engineers, "Maximum annual gage height, 10.48 feet due to an ice jam recorded at USGS gage Soucook River near Concord, New Hampshire on March 19, 1968." *US Army Corps of Engineers NH Ice Jams Database*

Potential Future Hazards

The Merrimack River, Soucook River, Turkey River, Contoocook River, and major brooks would be at greatest risk for flooding due to river ice jams. Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites. A major power dam is above Island Shores in Penacook at the Contoocook River and any ice jam would prove problematic.

Dam Breach and Failure

Dam failure results in rapid loss of water that is normally held by the dam. These kinds of floods are extremely dangerous and pose a significant threat to both life and property.

Area Events

Numerous dam breaches in recent history have likely occurred in the State, region, and the local area surrounding Concord that may have also had an impact on the City.

- **May 15, 2006**

The Pillsbury Lake Dam in Webster, holding back an artificial lake of about 70 acres, was breached by flooding due to heavy rains. The earth and concrete dam, which blocks the Dear Meadow Brook, was built in the 1960s, creating the Pillsbury Lake District with about 180 households. Floodwaters punched out a 20-foot breach in the dam. The Lake's level fell several feet. *Concord Monitor*, 5/18/06

Events in Concord

There are currently 42 active dams in Concord in the 2009 New Hampshire Dam database maintained by the Department of Environmental Services Dam Bureau. According to RSA 482:2 II, a dam is any artificial barrier which impounds or diverts water, has a height of four feet or more or has a storage capacity of two acre-feet or more, or is located at the outlet of a great pond. Inactive dams are defined as dams that do not meet the legal definition of a dam. There are 29 inactive/unclassified dams listed in Concord that do not meet the above definition and may be in ruins, breached, removed, or never built.

Concord has one (1) High Hazard Dam, three (3) Significant (S) Hazard dams, and six (6) Low (L) Hazard dams as displayed in **Table 1** below.

Table 1
Dams with Risk

Dam	Status	Risk Level	Water Body	Map	Map Index
051.13 Penacook Lake Dam	Active	H	Rattlesnake Brook	3B & 4B	D1
051.02 York Dam Contoocook River	Active	S	Contoocook River	3B & 4B	D2
051.06 Penacook Upper Falls Dam	Active	S	Contoocook River	3B & 4B	D3
051.25 Turkey Pond Dam	Active	S	Turkey River	3B & 4B	D4
051.12 Lower St. Pauls School Pond Dam	Active	L	Turkey River	3B & 4B	D5
051.21 Turtle Pond Dam	Active	L	TR Mill Brook	3B & 4B	D6
051.28 Hoit Road Marsh Dam	Active	L	TR Hackett Brook	3B & 4B	D7
051.43 Allied Leather Forebay	Active	L	Rolfe Canal	3B & 4B	D8
051.46 Briar Hydro Penstock Intake	Active	L	Rolfe Canal	3B & 4B	D9
051.62 Sheep Davis Rd. Dam	Active	L	NA	3B & 4B	D10

From [Table 1](#), the Penacook Upper Falls Dam (formerly known as the Riverside Millwork Company Dam) on the Contoocook River, the Sewalls Falls Dam on the Merrimack River, and the Smith Farm Pond Dam on Rattlesnake Brook have all been breached and many more Concord dams lie in ruins. The amount of flooding that each of these breaches caused is unknown. The 1999 FEMA Flood Study was performed taking the breach of the Sewalls Falls Dam, and likely any other dams breached prior to 1997, into consideration.

Potential Future Hazards

Every dam is categorized into one of four classifications, which are differentiated by the degree of potential damages that a failure of the dam is expected to cause. The classifications are designated as High Hazard (H), Significant Hazard (S), Low Hazard (L), and Non-Menace (NM).

The Penacook Upper Falls Dam would be considered the highest priority dam because of the nearby residential facilities and power loss potential. However, the Penacook Lake Dam has a High hazard potential, and each of the other two Significant hazard potential dams, Turkey Pond Dam and York Dam Contoocook River, also pose a concern.

Refer to [CHAPTER 3. ASSET AND RISK IDENTIFICATION](#) for vulnerability of specific sites.

Stream Bank Erosion and Scouring

Watercourses which are particularly prone to flash-flooding conditions are most vulnerable to erosion and scouring. These types of rivers are primarily found at higher elevations.

Area Events

Bank erosion events in recent history have likely occurred in the State, region, and the local area surrounding Concord.

CONCORD STREAM BANK EROSION AND SCOURING EVENTS	
Probability -	Moderate
Severity -	Moderate
Overall Risk -	3.33

- May 14 - 17, 2006

The Suncook River through Epsom changed its course during this heavy rain event and its resultant flooding. The River shifted hundreds of meters, flowing around two dams, creating about a mile of new river through a sand pit a half-mile from its original course, and leaving a similar length of dry riverbed. The water carved through peat bogs and tore away a corner of a sand excavation pit. Pittsfield experienced bank erosion as their floodgates failed, and Epsom, Allenstown, and Pembroke later dealt with siltation issues from the new river course. *Concord Monitor*, 5/18 - 5/23/06.

Events in Concord

These hazard events were found to have directly impacted Concord.

- May 14 - 17, 2006

During the Mother's Day flood, flooding on Iron Works Road washed the bridge out. *Concord Hazard Mitigation Task Force 2011*

Potential Future Hazards

Bank erosion and scouring is most prevalent on the banks of the Merrimack, Contoocook, and Soucook Rivers.

There is a potential for scouring on the Merrimack behind the NH DOT and Shaws on Fort Eddy Road. More trees have fallen into the River at the Shaws. Erosion from the Contoocook River occurs on Broad Cove Road area, some of which has been ripped.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Debris Impacted Infrastructure

Debris carried by floodwaters can compromise the effectiveness of bridges, dams, culverts, diverting structures, etc. This debris may compound a flooding hazard by becoming obstructions to normal floodwater flow.

CONCORD DEBRIS IMPACTED INFRASTRUCTURE EVENTS	
Probability -	Moderate
Severity -	Moderate
Overall Risk -	3.33

Area Events

Debris impaction events in recent history have likely occurred in the State, region, and the local area surrounding Concord that may have also had an impact on the City.

- No details on specific events were found during area research.

Events in Concord

These hazard events were found to have directly impacted Concord.

- **Recurring Debris Impacted Infrastructure Events**
Bow Brook originates at Thayer Pond has the potential to overflow and could be impacted by debris. School Street, Warren Street, Pleasant, State Hospital, Clinton Street, South Street, Rockingham Street washed out. City received federal money to repair Pleasant and Warren. *Concord Hazard Mitigation Task Force 2011*

Potential Future Hazards

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Rattlesnake Brook leaves the City's water supply and travels through a residential zone, spilling out into the floodplain. The Mother's Day storm had blowdown which had an impact on some of the older culverts.

Bow Brook originates at Thayer Pond has the potential to overflow and could be impacted by debris. School Street, Warren Street, Pleasant, State Hospital, Clinton Street, South Street, Rockingham Street washed out in the past and may again be impacted.

Tornadoes

Significantly high winds occur especially during hurricanes, tornadoes, winter storms, and thunderstorms. Falling objects and downed power lines are dangerous risks associated with high winds. In addition, property damage and downed trees are common during high wind occurrences.

CONCORD TORNADO EVENTS	
Probability -	Low
Severity -	High
Overall Risk -	2.67

A tornado is a violent windstorm characterized by a twisting, funnel shaped cloud. They develop when cool air overrides a layer of warm air, causing the warm air to rise rapidly. The atmospheric conditions required for the formation of a tornado include great thermal instability, high humidity, and the convergence of warm, moist air at low levels with cooler, drier air aloft. Most tornadoes remain suspended in the atmosphere, but if they touch down they become a force of destruction.

Tornadoes produce the most violent winds on earth, at speeds of 280 mph or more. In addition, tornadoes can travel at a forward speed of up to 70 mph. Damage paths can be in excess of one mile wide and 50 miles long. Violent winds and debris slamming into buildings cause the most structural damage.

The Fujita Scale is the standard scale for rating the severity of a tornado as measured by the damage it causes. A tornado is usually accompanied by thunder, lightning, heavy rain, and a loud "freight train" noise. In comparison to a hurricane, a tornado covers a much smaller area but can be more violent and destructive.

Area Events

Numerous tornadoes in recent history have occurred in the State, region, and the local area surrounding Concord that may have also had an impact on the City.

Tornadoes can occur at anytime of the year, although they are rare outside of the warm season. The peak months of tornado occurrence in the Northeast are June through August, with August being the most frequent month. Thunderstorms have been responsible for spawning tornadoes in many parts of New England. On average, six tornadoes per year touch down somewhere in New England. Damage from tornadoes is caused as a result of high wind velocity and wind blown debris. Although there is no evidence a tornado has occurred directly in Concord, it is a likely possibility for a tornado to touch down in Merrimack County again and even in Concord.

- Early Tornadoes, 1791-1821

Four tornadoes rated F2 or higher on the Fujita Tornado Damage Scale (winds between 113-157 mph causing considerable damage) occurred in Merrimack County on July 14, 1791, September 5, 1792, July 1793, and on September 9, 1821. The impact to Concord from these events is unknown. *NH Bureau of Emergency Management*

- July 9, 1953

The worst tornado ever to strike New England was the Worcester Tornado of July 9, 1953. Within one minute, 90 people were killed and over 1,300 injured. Damage was estimated to exceed \$52 million. The impact to Concord is unknown. *Source undetermined*

- Tornadoes, 1962 - 1976
Three separate tornadoes, all of an F1 intensity, touched down in Merrimack County. The March 31, 1962 tornado had caused no injuries, but in the July 12, 1967 and August 15, 1976 tornadoes, five people were injured during each event. The impact to Concord from these events is unknown. *The Tornado Project*
- July 2008
An F2-F1 tornado touched down in Rockingham County then proceeded into Hillsborough and Merrimack Counties. The tornado killed a woman in Deerfield trapped in a collapsed house. Damage was estimated to exceed \$10 million. *NH Homeland Security-Emergency Management*

Events in Concord

These hazard events were found to have directly impacted Concord.

- July 23, 1946
A tornado struck and damaged the National Guard Armory on Airport Road. *Concord Daily Monitor*
- July 27, 1979
The Concord Monitor reported that during a severe thunder and lightning storm, a small twister was sighted at Beaver Meadow, where 13 trees were toppled, including a 100-foot tall pine. The duration was about 15-20 seconds. *Concord Daily Monitor*

Potential Future Hazards

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

All critical facilities would be vulnerable, and areas such as manufactured home parks with a high concentration of residents in vulnerable structures would be particularly at risk. Areas of high density including Downtown, Concord Heights, and Penacook would be the most vulnerable in Concord, in addition to senior housing, schools, and apartments. These types of facilities are scattered throughout the City.

Disturbance of communications towers would cause the most difficulty in the City.

Downbursts and High Winds

A downburst is a severe localized wind blasting down from a thunderstorm. These "straight line" winds are distinguishable from tornadic activity by the pattern of destruction and debris. Downbursts fall into two categories:

- microburst, which covers an area less than 2.5 miles in diameter; and
- macroburst, which covers an area at least 2.5 miles in diameter.

CONCORD DOWNBURST AND HIGH WIND EVENTS	
Probability -	Moderate
Severity -	Moderate
Overall Risk -	3.33

Area Events

Numerous downburst in recent history have occurred in the State, region, and the local area surrounding Concord that may have also had an impact on the City.

- July 6, 1999
A downburst impacted three counties in New Hampshire, including Merrimack County. It resulted in 2 deaths. Also, two roofs were blown off and widespread power outages occurred. The downburst was designated a macroburst (at least 2.5 miles in diameter). *Source undetermined*

Events in Concord

These hazard events were found to have directly impacted Concord.

- May 21, 1963
A 80 MPH windstorm knocked over trees and caused power outages in Concord and the surrounding towns. *Concord Daily Monitor*
- November 27, 1979
A wind and rain storm ripped up trees on Oak Hill Road and South Curtisville Road and downed branches throughout the City. Power lines were downed on South Main Street. Seven hundred electric customers lost power. *Concord Daily Monitor*
- October 1, 1998
High winds reaching up to 44mph downed trees and limbs in Concord. Scattered power outages were also reported in the City. *Source undetermined*
- December 22, 1998
Strong gusty west-northwesterly winds following a passage of a cold front brought high winds on December 22, 1998 reaching 46 mph. Trees and tree limbs were downed in Concord. *Source undetermined*
- May or June of 2005
A microburst hit the Concord Country Club, which caused downed trees and loss of power. No injuries were reported. *Concord Hazard Mitigation Task Force 2011*
- February 25, 2010
The City of Concord sustained damaging winds up to 68 miles per hour and a 1.7 inches rain fall. The impacts of the weather caused Operational and Communications units of

the Concord Fire Department to be pushed to the maximum of their capabilities. Over 136 calls for service for Concord Fire Department and 578 runs through out the Capital Area Mutual Aid Compact were received. Multiple calls for downed power lines and trees into structures were received. An audible alarm was transmitted to call back off duty members to assist with emergency response. The City emergency operations center was activated to support the event. A FEMA reimbursement request for federal disaster FEMA-1892-DR-NH in the amount of 105,579.18 represents costs incurred during the period beginning Friday February 26, 2010 through April 17, 2010 for removing trees and limbs off streets immediately after the wind storm to open streets up and placing barricades to close streets when power lines were down on them until the power company was able to take care of the downed power lines. The costs are also for picking up debris from streets, sidewalks, parks, cemeteries and the public golf course for several weeks after the storm came through. *Concord Fire Department After Action Report, 2/25/10 and General Services Letter to FEMA 5/12/10*

Potential Future Hazards

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

All critical facilities would be vulnerable, and areas such as manufactured home parks with a high concentration of residents in vulnerable structures would be particularly at risk. Areas of high density including Downtown, Concord Heights, and Penacook would be the most vulnerable in Concord, in addition to senior housing, schools, and apartments. These types of facilities are scattered throughout the City.

Disturbance of communications towers would cause the most difficulty in the City.

Lightning

All thunderstorms contain lightning. During a lightning discharge, the sudden heating of the air causes it to expand rapidly. After the discharge, the air contracts quickly as it cools back to ambient temperatures. This rapid expansion and contraction of the air causes a shock wave that we hear as thunder, a shock wave that can damage building walls and break glass. Lightning strikes can cause death, injury, and property damage.

CONCORD LIGHTNING EVENTS	
Probability -	High
Severity -	Low
Overall Risk -	3.00

Area Events

Localized lightning strikes in recent history have likely occurred in the State, region, and the local area surrounding Concord.

- June 12, 2005
During a thunderstorm, lightning struck and severely damaged the historic Loudon Town Hall on Clough Hill Road. *Loudon Hazard Mitigation Committee, 2005*

Events in Concord

These hazard events were found to have directly impacted Concord.

- September 15, 1949
A Penacook house was struck by a lightning bolt on Prospect Street. Six firemen were injured fighting the resulting blaze. *Concord Daily Monitor*
- June 20, 1969
The Concord Daily Monitor reported that a bolt of lightning killed a youth on Pleasant Street during a severe storm. *Concord Daily Monitor*
- July 9, 2004
Lightning struck a shed at 30 Fairfield Drive. The shed was destroyed by the resulting fire. *Concord Fire Department 2011*
- June 6, 2005
Lightning struck at 4 Deer Track Lane destroyed a transformer plugged into a wall outlet in a garage. *Concord Fire Department 2011*
- July 11, 2006
Lightning ignited a brush fire at Oak Hill Road near Tuttle Town Pond. *Concord Fire Department 2011*
- June 5, 2007
Lightning hit a tree at 8 Crestwood Drive and sent a surge into the adjoining mobile home, igniting an electrical panel in a closet. *Concord Fire Department 2011*
- August 18, 2007
A tree near 74 Weir Road was struck by lightning. *Concord Fire Department 2011*

Potential Future Hazards

Lightning can strike at any given location. Particularly vulnerable sites would be remote areas that cannot be easily accessed by emergency vehicles.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites. Concord Hospital because of its elevation is particularly vulnerable. Church steeples, communications towers, water and wastewater facilities and pumping stations could be susceptible to lightning strikes. Loudon Road/Concord Heights area is particularly susceptible because it is flat. The Wheelabrator smoke stack may be vulnerable.

Wildfire

Wildfire is defined as an uncontrolled and rapidly spreading fire. A forest fire is an uncontrolled fire in a woody area. They often occur during drought and when woody debris on the forest floor is readily available to fuel the fire. Grass fires are uncontrolled fires in grassy areas.

CONCORD WILDFIRE EVENTS	
Probability -	Low
Severity -	Low
Overall Risk -	1.00

Area Events

Wildfire events in recent history have likely occurred in the State, region, and the local area surrounding Concord that may have also had an impact on the City.

- April 29, 2006
A freight train sparked brush fires along tracks in Bow, Hooksett and Manchester. In Bow, a 50' by 350' fire was spreading toward the woods when officials arrived on the scene. Concord Fire Chief said that fires sparked by trains are not unusual and they are typically caused by exhaust coming out of the stack. *WMUR News*
- April 2006
A Wildfire in Webster burned over five acres throughout the night. Fire crews had to dig embers out of the soil that were 4 to 5 inches deep. The Forest Ranger commented that embers embedded that deep in the soil at that time of year was very unusual. *WMUR 4/20/06*

Events in Concord

These hazard events were found to have directly impacted Concord.

- September 18, 1948
A forest fire caused by lightning burned more than 3 acres on Hopkinton Road. *Concord Daily Monitor*
- May 16, 1955
A 50-acre wildfire burned a portion of Concord Heights. *Concord Daily Monitor*
- April 23, 1962
A brush fire, during a drought period, burned 30 acres on Loudon Road. *Concord Daily Monitor*
- April 30, 1962
A Concord Heights blaze fueled by drought conditions covered 300 acres. Homes were evacuated along Old Loudon Road and Sheep Davis Road. Rainfall finally extinguished the fire. *Concord Daily Monitor*
- April 1965
A large forest fire threatened the Heights. No other information known. *Concord Daily Monitor from 1985 article*

- March 28, 1968
Two large grass fires occurred on Pembroke Road and Manchester Street. *Concord Daily Monitor*
- May 1, 1972
A large brushfire burned over 30 acres on the Heights. *Concord Daily Monitor*
- June 24, 1973
A railroad car of grains spontaneously combusted at the railroad yard. It was determined the grain was improperly processed and stored while it was too hot. *Concord Daily Monitor*
- April 1985
Several fires were reported by the Concord Monitor while the City experienced drought conditions. A Garvins Falls brush fire consumed 20 acres. Many local and area brush fires were occurring. One, a fire on the Heights, burned 90 acres, during which five homes were threatened. It was the worst forest fire since the same area burned in 1965. *Concord Daily Monitor*
- May 15, 1986
A suspicious forest fire burned 50 acres near Garvins Falls Road. The isolated area made efforts to fight the fire difficult; the railroad bed did provide some access. *Concord Daily Monitor*
- September 22, 2010
St. Paul's Island in Turkey Pond is uninhabited with mature trees. A brush fire was burning for days before it was reported to the Fire Department. The fire was put out with no injuries. *Concord Hazard Mitigation Task Force 2011*
- 2004-2010
Other wildfires as documented in [Table 2](#) were reported by the Concord Fire Department as of 10/20/10:

Table 2
Wildfires, 2004-2010

Year	# Wildland Fires	# Burning 1 acre or greater	Notes
2004	33	5	
2005	25	4	
2006	40	8	
2007	60	7	5/9/2007 fire at 71 Airport Road burned 13 acres
2008	34	7	
2009	26	4	
2010 YTD	56	7	
Total	274	42	

Source: Concord Fire Department, October 10, 2010

Potential Future Hazards

Concord's rural area encompasses the majority of the City. New housing developments in rural areas would be particularly vulnerable. Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Garvins Falls Road, Shaker Road, Hoit Road, District 5 Road, Lakeview Road, Little Pond Road, Carter Hill Road, Fiske Road, Whitney Road, Curtisville Road, Elm Street in Penacook, and many others are rural roads with many homes set in the trees and have susceptibility to fire. There is significant dirt bike and four wheeler activity on many of these roads. Many fires are set and many small fires have occurred.

Severe Winter Weather

Ice and snow events typically occur during the winter months and can cause loss of life, property damage, and tree damage.

A winter storm can range from moderate snow to blizzard conditions. Blizzard conditions occur when blinding, wind-driven snow over 35 mph that lasts several days. A severe winter storm deposits four or more inches of snow during a 12-hour period or six inches of snow during a 24-hour period.

CONCORD SEVERE WINTER WEATHER EVENTS	
Probability -	High
Severity -	Moderate
Overall Risk -	6.00

An ice storm involves rain, which freezes upon impact. An ice coating at least one-fourth inch in thickness is heavy enough to damage trees, overhead wires, and similar objects. Ice storms also often produce widespread power outages.

A Nor'easter is a large weather system traveling from South to North, passing along or near the seacoast. As the storm approaches New England and its intensity becomes increasingly apparent, the resulting counterclockwise cyclonic winds impact the coast and inland areas from a Northeasterly direction. In the winter months, oftentimes blizzard conditions accompany these events. The added impact of snow and/or ice upon infrastructure often affects transportation and the delivery of goods and services for extended periods.

Extreme cold temperatures are associated with continental Arctic air masses. The actual temperatures reached depend specifically on the nature of the cold air mass and where it originated. In general, those from the Arctic regions are the coldest. Though cold temperatures are dangerous in their own right, they become more so in conjunction with strong winds. The combination produces a wind-chill factor - heat loss measured in Watts per meter squared (Wm^{-2}). A wind-chill factor of $1400 Wm^{-2}$ is equivalent to a temperature of -40 degrees F. At $2700 Wm^{-2}$, exposed flesh freezes within a half minute.

All winter storms make walking and driving extremely dangerous. The elderly and very young are at high risk during winter storms and may be affected by hypothermia and isolation. During winter storms, there is an increased risk of fire because people may lose electricity and use candles, portable gas stoves, and other flammable sources of heat and light (*Northeast States Emergency Consortium*).

Area Events

Numerous severe winter events in recent history have occurred in the State, region, and the local area surrounding Concord that may have also had an impact on the City. Unlike the relatively infrequent hurricane, New Hampshire generally experiences at least one or two Nor'easters each year with varying degrees of severity. These storms have the potential to inflict more damage than many hurricanes because the high storm surge and high winds can last from 12 hours to 3 days, while the duration of hurricanes ranges from 6 to 12 hours. Severe winter storms, including Nor'easters, typically occur during January and February. However, winter storms can occur from late September through late May.

There are numerous heavy snowstorms that have impacted the central NH region in the past. Many of these do not include detailed information on the impacts, however usually infrastructure, including critical facilities, are impacted by heavy snow. The added impact of the masses of snow and/or ice upon infrastructure often affects transportation and the delivery of goods and services for extended periods. Power outages are also a common impact during snowstorms. The following descriptions are of heavy snowstorms that have additional detail.

- January 11, 1810
Portions of New Hampshire were affected by a severe cold snap. It is unknown what impacts this event had on Concord. *Pembroke Town History*
- Year of 1816
Portions of New Hampshire experienced a very cold year. Little corn was raised during the year because of the cold weather. In some places there was a frost throughout the year. It is unknown what impacts this event had on Concord. *Pembroke Town History*
- March 11-14, 1888
All of New England experienced a major snowstorm with snow accumulations of 30-50 inches, one of the most severe winter storms to ever hit New England. It is unknown how Concord was affected. *Northeast States Emergency Consortium*
- December 17-20, 1929
On December 17-20, 1929, an ice storm caused unprecedented disruption and damage to telephone, telegraph and power systems throughout the State. It is unknown how severe the storm was in Concord. *US Army Corps of Engineers NH Storms database*
- December 29-30, 1942
On December 29-30, 1942, a severe glaze ice storm impacted the entire State. It is unknown what impacts this storm had on Concord. *US Army Corps of Engineers NH Storms database*
- Snowstorms, 1940-1978
Ten severe snowstorms are documented in south-central New Hampshire during this time span, February 14-15, 1940 (depths over 30" and high winds), February 14-17, 1958 (20-33"), March 18-21, 1958 (22-24"), March 2-5, 1960 (up to 25"), January 18-20, 1961 (up to 25", blizzard conditions), January 11-14, 1964 (up to 12"), January 29-31, 1966 (up to 10"), February 22-28, 1969 (24-98", slow-moving storm), December 25-28, 1969 (12-18"), January 19-21, 1978 (up to 16"). Accumulations ranged from 10-33 inches in the area and even to 98 inches in the western portion of the State. It is unknown how Concord was affected. *American Meteorological Society*
- December 22, 1969-January 17, 1970
Many communities experienced power disruption during long ice storm period; it is unknown if Concord was among them. *US Army Corps of Engineers NH Storms database*

- February 5-7, 1978
This snowstorm is described as “a natural disaster of major proportions” and stunned all of New England. The storm was caused by an intense coastal Nor’easter that produced winds in excess of hurricane force and very high snow totals. Most of southern New England received more than three feet of snow, 25-33” in NH and higher throughout New England. Abandoned cars along roadways immobilized infrastructure and blocked major interstates. For over a week, New England remained paralyzed by the storm. All of New Hampshire was impacted by the storm. Governor Meldrim Thomson Jr. declared a state of emergency. *American Meteorological Society, Northeast States Emergency Consortium*
- January 8-25, 1979
Impacts from this ice storm were felt throughout the State of New Hampshire. There were major disruptions to power and transportation in many communities. It is unknown what effects were felt in Concord. *US Army Corps of Engineers NH Storms database*
- Snowstorms, 1982-2001
Four major snowstorms impacted New England, on April 5-7, 1982 (18-22”), in March 1993, in February 1996 (snow, ice and bitter temperatures), and in March 2001. It is unknown how Concord was affected. *American Meteorological Society, Northeast States Emergency Consortium, Suncook-Hooksett Banner March 7, 1996*
- March 3-6, 1991
This ice storm impacted the entire State of New Hampshire. Numerous outages from ice-laden power lines in southern New Hampshire occurred. It is unknown what impacts this storm had on Concord. *US Army Corps of Engineers NH Storms database, NH Bureau of Emergency Management*
- December 1996
Heavy snowfall hit the State of New Hampshire December, 1996. It is unknown how Concord was affected.
- January 7, 1998
This ice storm had severe impacts throughout most of the State, with 52 communities impacted. FEMA Disaster Declaration #1199, Six injuries and one death resulted. Damage totaled \$12,446,202. In addition, there were 20 major road closures, 67,586 people left without electricity, and 2,310 people without phone service. *US Army Corps of Engineers NH Storms database, NH Bureau of Emergency Management*
- March 23, 1999
This storm hit New Hampshire with snow and wind. Two feet of snow fell overnight on Mt. Washington and at approximately 18,000 New Hampshire residents lost electricity. It is unknown how Concord was affected.
- January 16, 2004
Bitter cold and blustery winds made temperatures feel as cold as -40 degrees. Outdoor exposure in the State was deadly and led to six deaths. It is unknown what impacts this event had on Concord. *Associated Press*

- December 12, 2008

FEMA-1812-DR. Accumulating ice, snow, rain, and strong winds caused downed trees and power lines, with power outages and traffic accidents resulting. In Merrimack County, debris removal and repair cost reimbursement FEMA the equivalent of \$10.07 per capita (146,455 people in 2010). In Hillsborough County, debris removal costs were \$6.35 per capita (400,721 people in 2010). The major disaster was declared in all 10 counties. *fema.gov*

Hundreds of thousands of home and business owners in the State were without heat or electricity after an ice storm moved through the State causing the largest power outage in New Hampshire's history. In the Concord area, 10,746 Unitil customers were out of power during the peak power outage. *Concord Monitor*

Events in Concord

These hazard events were found to have directly impacted Concord.

- September 25, 1963

An unseasonable record cold of 26 degrees for this date was recorded. *Concord Daily Monitor*

- January 24, 1966

A major snowfall dumped 14 inches of snow on the City. *Concord Daily Monitor*

- February - March 1967

Two February storms brought 8.5 inches and 9.5 inches of snow to Concord. In March, a major snowstorm dumped an additional 12-14 inches of snow. *Concord Daily Monitor*

- February 26, 1969

In Concord, 56 hours of continuous snow was recorded. *Concord Daily Monitor*

- January - February 2008

Heavy snowloads caused multiple building collapses, including Oak Bridge Condominium Pool Building, Beede Electric, Hall Street Capitol Distributors loading dock. *Concord Hazard Mitigation Task Force 2011*

- December 12, 2008

Hundreds of thousands of home and business owners in the State were without heat or electricity after an ice storm moved through the State causing the largest power outage in New Hampshire's history. Unitil had 5,000 customers out in Concord. A large amount of FEMA funds were received for snow and ice removal from streets and sidewalks as well as removing trees and limbs off streets when they came down with ice on them. *Concord Monitor, Concord Hazard Mitigation Task Force 2011*

Potential Future Hazards

It is highly likely that Concord will be impacted by severe winter weather in the future. Damage and serious conditions can result in any location of the community. Areas that are particularly vulnerable would be the northern elevations and remote locations, where alternate access may not be possible.

In preparation for further power failure episodes, Unitil revised their emergency response plan to the ICS structure to be compatible with Federal, State, and local emergency response procedures.

Building risk is considered due to snow load on buildings. General Services keeps up with plowing, salting, and sanding roads and sidewalks. Red listed bridges are kept clear of snow and ice. No particular problematic areas were identified.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Earthquake

An earthquake is a rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines, and often cause landslides, flash floods, fires, and avalanches.

Larger earthquakes usually begin with slight tremors but rapidly take the form of one or more violent shocks, and end in vibrations of gradually diminishing force called aftershocks. The underground point of origin of an earthquake is called its focus; the point on the surface directly above the focus is the epicenter. The magnitude and intensity of an earthquake is determined by the use of scales such as the Richter scale and Mercalli scale. Geologic events are often associated with California, but New England is considered a moderate risk earthquake zone.

CONCORD EARTHQUAKE EVENTS	
Probability -	Moderate
Severity -	Low
Overall Risk -	2.00

Area Events

Numerous earthquake events in recent history have occurred in the State, region, and the local area surrounding Concord that may have also had an impact on the City. No earthquakes have been documented in Concord. Between 1728 and 1989, there have been 270 earthquakes in New Hampshire (*Northeast Emergency Consortium*). Four of these earthquakes were of a Richter Magnitude scale of 4.2 or more (*Northeast Emergency Consortium*). Two of these occurred in Ossipee, one west of Laconia, and one near the Quebec border. The likelihood of a future earthquake affecting Concord is perhaps a **Moderate** possibility.

Historically, New England has experienced some earthquakes. New England experiences an average of 30-40 earthquakes per year, but most are not felt.

- Early Earthquakes, 1727 and 1755
Both earthquakes, October 29, 1727 and November 18, 1755, caused damage to the New England coastline and throughout New England. The impact to Concord from these events is unknown. *Northeast States Emergency Consortium*
- March 28, 1890
In New Hampshire, an earthquake produced 30 seconds of rumbling. *History of Concord, NH (J Lyford)*
- November 18, 1929
An earthquake originating at the Grand Banks in Newfoundland at a scale of 7.2 was felt by all of New Hampshire. It is unknown what impacts this event had on Concord. *National Earthquake Information Center*
- December 20 and 24, 1940
In late December, New Hampshire felt the shock of two earthquakes, both at 5.5 on the Richter scale. The earthquakes originated near Tamworth in Ossipee. The impacts to Concord are below. *National Earthquake Information Center, Northeast States Emergency Consortium*

- June 15, 1973
An earthquake originating near the Quebec border at a scale of 4.8 was felt in various locations throughout the State. It is unknown what impacts this event had on Concord. *Northeast States Emergency Consortium*
- January 19, 1982
An earthquake with magnitude 4.5 originated west of Laconia on January 19, 1982. The impacts to Concord are below. *Northeast States Emergency Consortium*
- September 25, 2010
"A magnitude 3.2 earthquake rattled buildings and nerves across much of New Hampshire Saturday night. The quake occurred at 11:28 p.m. and was centered about 10 miles north of Concord, according to the U.S. Geological Survey. State police said they received reports from residents across the state who reported what they thought was an explosion. The quake was felt in places like Fremont, Derry, Durham, Henniker, Penacook and Raymond. There were no reports of damage." *Union Leader*

Events in Concord

These hazard events were found to have directly impacted Concord.

- October 20, 1870
Four earthquake shocks were felt in Concord at 11:30 am. *History of Concord, NH (J Lyford)*
- November 18, 1872
"Every heavy shock of earthquake" was reported at 2:05 pm in Concord. *History of Concord, NH (J Lyford)*
- December 19, 1882
Heaviest shock "ever remembered" occurred at 5:20 pm in Concord. *History of Concord, NH (J Lyford)*
- November 23, 1884
Two heavy shocks of an earthquake were reported at 12:30 and again at 12:45 in Concord. *History of Concord, NH (J Lyford)*
- December 20 and 24, 1940
In late December, New Hampshire felt the shock of two earthquakes, both at 5.5 on the Richter scale. The earthquakes originated near Tamworth in Ossipee but the tremors were felt in Concord, 50 miles away. The State Library sustained damage and a building at St. Paul's School was cracked. *National Earthquake Information Center, Northeast States Emergency Consortium*
- January 19, 1982
An earthquake with magnitude 4.5 originated west of Laconia on January 19, 1982. This caused a water main to rupture in Concord 20 miles away. *Northeast States Emergency Consortium*

- June 23, 2010
The June 23, 2010 Ontario-Quebec border region earthquake occurred at 1:42 pm local (eastern) time about 60 km (38 miles) north of Ottawa, Ontario, Canada's capital city. The preliminary estimate of magnitude (M) is 5.0, at a depth of roughly 19 km (12 miles). This earthquake occurred near the southern edge of the Western Quebec Seismic Zone. Earthquakes within this zone are mostly small. *Website: earthquake.usgs.gov*
- September 25, 2010
Two service calls were received related to building assessments. No damages were reported. *Concord Hazard Mitigation Task Force 2011*

Potential Future Hazards

While it is unlikely an earthquake's epicenter would be in Concord, the entire City could feel its effects. The Downtown Conflagration area, with older, higher buildings, would likely be the most vulnerable for building collapse. Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Building Code requirements for old building that are being refurbished would take earthquakes into account.

Abandoned buildings may be most prone to earthquakes, such as those that off of Langdon Street, Poplar Avenue, and the old Boston and Maine buildings.

Landslide

A landslide is the downward or outward movement of slope-forming materials reacting under the force of gravity including: mudflows, mudslides, debris flows, rockslides, debris avalanches, debris slides, and earth flows. Landslides have damaged or destroyed roads, railroads, pipelines, electrical and telephone lines, mines, oil wells buildings, canals, sewers, bridges, dams, seaports, airports, forests, parks, and farms.

CONCORD LANDSLIDE EVENTS	
Probability -	Low
Severity -	Low
Overall Risk -	1.00

Area Events

Localized landslides in recent history have likely occurred in the State, region, and the local area surrounding Concord.

- May 10, 2006
Backyard material slid toward a Bow home on Mother's Day catching a family, with one young child and expecting another, by surprise. No one was injured by the mudslide but thousands of dollars of property damage were caused. The debris and mud that slid and caused the damage came from land that didn't belong to the family. They had to move out for 10 days until a contractor deemed the property safe. *WMUR News*

Events in Concord

- No details on specific events were found during research on Concord.

Potential Future Hazards

No records of landslides in Concord have been found. However, development in close proximity to the Merrimack River is most commonly at risk for these events due to the steep slopes along the banks.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Upstream of Contoocook River on Broad Cove, erosion issues have occurred which now seem to be stable at this time.

Drought

A drought is defined as a long period of abnormally low precipitation, especially one that adversely affects growing or living conditions. Droughts are rare in New Hampshire. They generally are not as damaging and disruptive as floods and are more difficult to define. The effect of droughts is indicated through measurements of soil moisture, groundwater levels, and streamflow.

However, not all of these indicators will be minimal during a drought. For example, frequent minor rainstorms can replenish the soil moisture without raising ground-water levels or increasing streamflow. Low streamflow also correlates with low ground-water levels because ground water discharge to streams and rivers maintains streamflow during extended dry periods. Low streamflow and low ground-water levels commonly cause diminished water supply.

CONCORD DROUGHT EVENTS	
Probability -	Moderate
Severity -	Moderate
Overall Risk -	3.33

Area Events

Numerous drought events in recent history have occurred in the State, region, and the local area surrounding Concord that may have also had an impact on the City. Periods of drought have occurred historically in New Hampshire. The longest recorded continuous spell of less than normal precipitation occurred between 1960-69. In 1999, a drought warning was issued by the Governor's Office. In March 2002, all counties with the exception of Coos County were declared in Drought Emergency. This was the first time that low-water conditions had progressed beyond the Level Two, Drought Warning, stage. The likelihood of another drought affecting Concord in the future is a **Moderate** possibility.

- Various Droughts in the State of New Hampshire
In the years 1929-1936 (regional), 1939-1944 (severe in southwest, moderate elsewhere), and 1947-1950 (moderate), the State was hit by numerous and long-lasting droughts. Between 1960-1969 was the longest recorded continuous spell of less than normal precipitation with crops affected. For two consecutive years in the mid 1960s, wells went dry. The impact of these droughts in Concord is unknown. *NH Bureau of Emergency Management*
- April, 1999
In April 1999, due to lack of precipitation in the State, a drought warning was issued by the Governor's Office. The impact of the warning in Concord is narrated below. *NH Bureau of Emergency Management*
- March, 2002
A Drought Emergency was declared by the State, marking the first time low-water conditions have progressed beyond the Level Two stage. The impact to Concord is narrated below. *NH Department of Environmental Services*

Events in Concord

These hazard events were found to have directly impacted Concord.

- September-October, 1865
Although the precise impact in Concord is unknown, the occurrence of a drought appeared in the History of Concord. *History of Concord, NH (J Lyford)*

- October 19, 1963
The Concord Daily Monitor reported that the Merrimack River dried up around Sewalls Falls. *Concord Daily Monitor*
- August 1974
As reported by the Concord Daily Monitor, a months-long drought impacted Concord and surrounding towns. There were multiple area brush fires. Water restrictions were imposed in Concord, and area towns did likewise. Rain was hoped for to alleviate the fire danger conditions. *Concord Daily Monitor*
- April, 1999
There was concern for crops and domestic water supplies in Concord. It was the third driest April ever recorded with 0.83 inches of precipitation. Normal precipitation for the month of April is 2.91 inches. The dryness increased the threat of forest fires. *NH Bureau of Emergency Management*
- March, 2002
The City of Concord pumped extra water from the Contoocook River into Penacook Lake. The City also approved \$55,000 for emergency river water pumping. *NH Department of Environmental Services*

Potential Future Hazards

Drought effects are felt throughout regions, and Concord is no more likely to experience harder conditions than another community. Water-saving measures can be taken to reduce the effects of a drought.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

The City has a Drought Management Plan in place which lists condition levels after the State triggers a drought watch or emergency. The Penacook Lake level fluctuates, but the City has a backup drinking water source, and so low levels are not considered an issue. No drought was declared in 2010 despite the dry weather.

Radon

Radon is a naturally occurring radioactive gas with carcinogenic properties. The gas is a common problem in many states, including New Hampshire. Data collected by the NH Office of Community and Public Health's Bureau of Radiological Health indicates that one third of the houses in New Hampshire have indoor radon levels that exceed the US Environmental Protection Agency's "action level" of four picocuries per liter for at least some portion of the year.

CONCORD RADON EVENTS	
Probability -	Moderate
Severity -	Moderate
Overall Risk -	3.33

Radon may also enter homes dissolved in drinking water from drilled wells. High levels of radon in water from individual drilled wells is a common occurrence in New Hampshire.

Area Events

In New Hampshire, radon gas is a common problem, most often affecting the north, east and southeast portions of the State. The gas is colorless, tasteless, and has no odor. Radon is a radioactive gas that comes from the natural decay of uranium that is found in nearly all soils. It typically moves up through the ground to the air above and into homes through cracks and other holes in the foundation. Homes trap radon inside, regardless of age or how they are built. Radon from soil gas is the main cause of radon problems, although sometimes radon enters the home through well water. The gas is the second highest cause of lung cancer, behind smoking (*Environmental Protection Agency*).

- 1986-1987

In Dunbarton, a citizen initiative of well water testing, primarily around the Town Center, found that the radon levels in the community exceeded all levels in the country. The Elementary School well tested fine, but the church had a very high concentration, as well as the rest of the area at the top of the hill around the Town Offices. Residents placed filtration systems in their homes and public buildings.

The information garnered interviews with WMUR Channel 9 and a series of public meetings to raise the awareness of Town residents. Although there is no specific Town program in place, residents can test their wells using kits available at the NH Department of Environmental Services. *Dunbarton Hazard Mitigation Committee 2005*

Events in Concord

- No details on specific events were found during research on Concord.

Potential Future Hazards

Since most people in Concord drink municipal water out of treated surface water supplies, radon would be treated before entering the public water lines. The likelihood of the presence of radon in Concord is rated a **Moderate** possibility based on its likely occurrence in the bedrock as evidenced in *Map 1: Potential Hazards*.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Biological

Biological hazards are natural hazards that can be potentially catastrophic to ecosystem functioning and human and wildlife well-being. They can include medical wastes, microorganisms, viruses or toxins. Examples of biological hazards include invasive species and/or wildlife diseases such as West Nile Virus, Chronic Wasting Disease, Lyme Disease, Avian Influenza (Bird Flu), Dengue Fever, viral meningitis, red tides and algal blooms. Biological hazards are spread through animals, reptiles, fowl, bacteria, insects and spiders, plants, molds and fungus. In recent years, Avian Influenza has become a highly-discussed biological hazard because of its potential to annihilate large numbers of fowl, and particularly, domesticated birds such as chickens, ducks and turkeys. Humans are susceptible to Avian Flu through contact with infected birds. Human-induced biological hazards are possible but not consensually considered natural; they are often referred to as biological terror, where a biological hazard is manipulated in such a way to cause harm to others.

CONCORD BIOLOGICAL EVENTS	
Probability -	High
Severity -	Moderate
Overall Risk -	5.00

Area Events

In New Hampshire, the biological events most likely to affect a large population include health outbreaks such as flu, meningitis and conjunctivitis. Diseases such as West Nile Virus and EEE have found its way to the State, and although deaths have resulted from EEE, no humans have tested positive for West Nile.

- 1736-1737
From July 1736 to September 1737 in New Hampshire's coastal towns and inland to Kingston and Chester, about 1000 deaths were caused by "throat distemper." In 1754, 55 people in Hampton alone died of the same disease. [Merrills' *Gazetteer of the State of New Hampshire*, 1817.] *Epsom Town Historian*
- 1812-1816
A regional epidemic that was occurring in NH & VT known as "Spotted Fever," claimed many residents. The disease, uncertain to the cause even now, would cause victims to go from healthy to their deathbed in as little as six hours. The town of Warren has record of a mass burial of about two dozen victims. *Local CNHRPC Town Hazard Mitigation Committee*
- Year of 1918
Two thousand people in New Hampshire died of flu (Spanish flu) in nineteen eighteen compared to just one hundred forty five people the year before. *Department of Commerce*
- Year of 1996
Milfoil was discovered on the north end of Lake Massasecum in Bradford. A 10 to 11 acre portion of the lake was closed. Several chemical treatments were tried but failed to eradicate the milfoil. Eventually, the weed was harvested. *Blaisdell Lake Property Owners Association, Inc. August 3, 2002*

- February 1 - 14, 2002
In a two week period at a New Hampshire College, nearly 500 of the schools 5,060 students were affected by an outbreak of bacterial conjunctivitis. *Morbidity and Mortality Weekly Report*; 3/15/2002
- December 27, 2003
Three teenagers from southwestern New Hampshire were hospitalized for bacterial meningitis and a fourth from Concord was suspected of having the potentially fatal illness. An 18 year old girl from Bennington died from the illness. Two of the victims were from Monadnock Regional High School. *NY Times*, December 27, 2003
- Year of 2005
Seven people were tested in New Hampshire for EEE, Eastern Equine Encephalitis and two died. Forty-six (46) birds and a mosquito pool were tested for West Nile Virus. In Boscawen, a horse and several birds tested positive for WNV. *NH Center for Disease Control*

Events in Concord

These hazard events were found to have directly impacted Concord.

- Year of 2010
The City saw an increase in bedbug activity in 2010. The infestations have been reported in Meadow Brook, the Kennedy Apartments, the Endicott Hotel, and Capital Towers. *Concord Hazard Mitigation Task Force 2011*

Potential Future Hazards

Students are quite vulnerable to health outbreaks as they tend to congregate in large numbers and in shared environments where physical contact is common. If Avian Influenza was present in New Hampshire, people coming in contact with infected birds would be at greatest risk of contracting the virus. It is otherwise difficult to predict where a biological hazard would be potentially dangerous because of human and wildlife mobility.

The City's conservation land and recreation land holdings are growing and could lead to the public being more exposed to more EEE and West Nile. The most vulnerable populations include residents of retirement communities and school populations.

The City is an active member of the Capital Area Public Health Network, and the NH Technical Institute (NHTI) was named a Point of Distribution (POD). The City prepared to enact pandemic flu and H1n1 protocols. In 2009, Unital filed a pandemic plan with the Public Utilities Commission (PUC).

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites, including **Table 2G** and **Table 3C**.

TECHNOLOGICAL HAZARD EVENTS IN CONCORD

Events of this nature include hazardous material release, explosion/fire, transportation accident, building/structure collapse, power/utility failure, extreme air pollution, radiological event, fuel/resource shortage, strike, business interruption, financial collapse, and communication collapse. Dam failure is being treated as a natural hazard due to its flooding consequence and is located in the *Natural Hazards* section.

Hazardous Materials

Hazardous materials and hazardous wastes contain properties that make them potentially dangerous or harmful to humans. They can be liquids, solids, contained gases or sludge. Hazardous wastes can be the by-product of manufacturing, as well as discarded commercial products. Most households contain cleaning agents that become hazardous waste when disposed of improperly. Chemicals have numerous benefits but can also cause hazards during their production, storage, transportation, use or disposal. Hazardous materials can have adverse health related effects and may even cause death in certain cases. In addition, hazardous materials may damage homes, businesses and other property, as well as natural ecosystems. Chemical accidents in plants or chemical spills during transportation may often release hazardous chemicals.

CONCORD HAZARDOUS MATERIALS EVENTS	
Probability -	High
Severity -	Low
Overall Risk -	3.00

Area Events

The risk from hazardous materials spills or releases into groundwater is always present as long as consumers and homeowners make irresponsible decisions regarding the disposal of household chemicals. American families improperly dispose of, on average, 15 pounds of hazardous household chemicals in a year. These household chemicals can contaminate drinking water in wells and cause damage to various ecosystems. Most people contaminate without being aware that they are doing so. Further education is needed in order to reduce hazardous waste contamination.

- Circa 1960-1970

A junkyard was in operation by a former public employee near the Village of Epsom Mills some decades ago at the old farm later owned by Henry Carnevale. Battery acid, gas, and oil from junk cars were dumped onto the ground, and the pollution problems were left for future generations to deal with. *Epsom Town Historian*

Events in Concord

These hazard events were found to have directly impacted Concord.

- Early 1980's

A rail car was found to be leaking propane. *Concord Fire Department*

- Unknown date between 1994 and 1996

An anhydrous ammonia leak at occurred at Crowley Foods. *Concord Fire Department*

- May 27, 2004
Fifty-three businesses were forced to close at the Concord Center on Ferry Street in Concord when state officials discovered more than 70 buckets of formaldehyde, motor oil, roofing tar and cleaning solvents in the flooded basement. There were no reported injuries but some workers complained of headaches and dizziness. *Concord Monitor*

Potential Future Hazards

As the City has concentrated populations, infrastructure, and businesses, it is likely that traffic accidents will continue in addition to the possibility of other more common hazards such as power/utility failure and a hazardous material release. Particular areas of concern are the Public Service of New Hampshire's power generation plant (in Bow) use of anhydrous ammonia on the rail lines.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites, including **Table 5B** which includes Tier 2 information.

Explosion/Fire

Explosions are violent releases of energy due to a sudden increase in volume within a given space. Explosions produce extremely high temperatures and release gases. Urban fires in large, unoccupied buildings have occurred around the world. They are sometimes deliberate and sometimes accidental. They have the potential to cause widespread property damage and place both occupants and neighbors in danger.

CONCORD EXPLOSION/FIRE EVENTS	
Probability -	High
Severity -	Low
Overall Risk -	3.00

Area Events

There is a risk of explosion in households that use gas or oil burners or who store such gases or chemicals in an unsafe manner. Business and industrial sites would also be at potential risk of explosion if there existed flammable materials and especially gases and/or other chemicals.

- January 23, 2005

A near-fatal explosion occurred at the Gold Star sod farm in Canterbury. Gasoline fumes ignited a propane heater, triggering a fiery explosion and fire that consumed a large workshop and part of the main storage building. Fire crews from several departments battled the fire and laid sand down as a buffer between a nearby river in order to prevent contamination as pesticides and other chemicals burned. *Concord Monitor*

Events in Concord

These hazard events were found to have directly impacted Concord.

- April 13, 2004

French's Toy Shoppe, an established downtown business, was damaged by fire. A neighboring business and 3 abutting apartments were also damaged. The building was 230 years old. No injuries were reported, however, business was forecasted to be shut for one month for repairs. *Concord Monitor*

- December 28, 2005

An early morning fire at this neighborhood grocery store resulted in the complete loss of the building. This accidental fire caused an interruption in business for 9-months. Several staff members were forced to seek employment elsewhere and a neighborhood was without its only convenience store. *Concord Fire Department*

- May 12, 2006

A late night fire at the Dunkin Donuts at 121 South Main Street resulted in the complete destruction of the facility. This accidental fire originated within the restaurant and placed the business out of service for 5 months until a new facility could be rebuilt. Most employees were absorbed into other shops operated by the same owner. *Concord Fire Department*

- Circa 2008

The roof of the Administrative Building at Transformer Services Inc (TSI) on Regional Drive collapsed due to fire. The collapse occurred because of lightweight truss issues. *Concord Hazard Mitigation Task Force 2011*

- October 3, 2009
Friendly's Restaurant on Loudon Road was closed for nearly 9 months, which impacted many employees. A photo of the fire is provided in **CHAPTER 12. APPENDIX.**
Concord Hazard Mitigation Task Force 2011
- April 30, 2011
The fire at the Friendly Kitchen at 14 Montgomery Street destroyed the facility which provides meals to several thousand low income people annually. They have relocated to a temporary facility but it will take many months or years to rebuild a permanent facility. *Concord Hazard Mitigation Task Force 2011*

Potential Future Hazards

Explosions and building fires are more likely to occur and cause more damage in the Downtown Conflagration area due to close proximity of large numbers of businesses, vehicles, and people. Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Transformer Services Inc (TSI) on Regional Drive is considered a regular hazard because of the nature of their business. Small fires are a regular occurrence at the facility.

Transportation Accident

Given the number of passengers, frequency of travel, distances traveled and complexity of modern transport, relatively few major accidents involving large numbers of people have occurred. Nevertheless, transportation infrastructure has the potential to fail and cause major hazards; airplanes crash, trains derail, buses and other vehicles collide and boats sink.

CONCORD TRANSPORTATION ACCIDENT EVENTS	
Probability -	High
Severity -	Low
Overall Risk -	3.00

Area Events

Automobile accidents could occur on any roadway in the region. A major accident would have the greatest impact for travelers on I-89, I-93 and I-393, as these roads experience high traffic volume and vehicles travel at high speeds. In addition, several rail lines create the potential for a transportation accident. Many motor vehicle accidents occur at train crossings. Trains could potentially derail, causing injuries or fatalities and hazardous materials spills. The Concord-Lincoln Line runs 73 miles between Concord and Lincoln. It is owned by the State of New Hampshire. The New Hampshire Main Line runs between Concord, Nashua and Lowell, MA. This line is owned by the Pan AM Railways Inc and NH Southern Railway, respectively. The commodities most frequently transported on New Hampshire's rail lines are pulp, paper & allied products, stone, sand, gravel and metals and clay and glass products. In 1999, 876,882 expanded tons of coal and petroleum products, 791,200 tons of chemicals and 171,700 tons of waste and scrap metals were transported on NH rail lines.

- No details on specific events were found during research on the region.

Events in Concord

These hazard events were found to have directly impacted Concord.

- June 24, 1973
A railroad car of grains spontaneously combusted at the railroad yard. It was determined the grain was improperly processed and stored while it was too hot. *Concord Daily Monitor*
- Circa 1999
Two fuel tanker rollovers occurred on I-93 at exit 15. *Concord Fire Department*
- Circa 2000
A plane imbedded itself on the property of the State Farm on Clinton Street, now the State Surplus property. Two people were killed. *Concord Hazard Mitigation Task Force 2011*
- January 7, 2001
A minor landing accident occurred on an icy runway at the Concord Municipal Airport. The accident was blamed on the inexperience of the student pilot and the poor landing conditions. No injuries were reported. *National Transportation Safety Board*

- July 3, 2005
A Cessna 152 airplane was damaged during takeoff from Concord Municipal Airport. A certified flight instructor and non-certified student were not injured in the accident.
National Transportation Safety Board
- Miscellaneous Dates
Several other aircraft accidents not noted in this section have occurred in the City.
Concord Fire Department
- Unknown Date
A recent fuel tanker rollover occurred on the I-89 onramp (date unknown). *Concord Fire Department*
- February 2011
A locomotive rolled over near the Grappone Conference Center, injuring two occupants.
Concord Hazard Mitigation Task Force 2011
- May 31, 2011
A light plane crashed on arrival at Concord Airport, injuring the pilot. The pilot was transported to Concord Hospital. *Concord Hazard Mitigation Task Force 2011*

Potential Future Hazards

Traffic accidents are the most prevalent type of technological hazard occurring in the city. As detailed in [Table 8B](#), in 2010, there were **1,327** traffic accidents reported throughout the City. The number of Loudon Road at Fort Eddy/Exit 14 accidents was the highest accident intersection, with **38** that year. Approximately 25% of the total reported accidents in the City are on the Loudon Road corridor.

Concord contains the Concord Municipal Airport and the NH Air National Guard, and is in close proximity to the Manchester airport. The New Hampshire International Speedway and events at St. Paul's regularly generate a fair amount of local air traffic at certain times of the year.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Holiday traffic causes numerous small accidents. Race days do not add significant numbers. Numerous tractor trailer accidents block the interstates, which can cause chain accidents and cause significant delays.

Building/Structure Collapse

Building or structure collapse may occur as a result of fire due to the age of a building or structure as well as from a significant natural disaster such as an earthquake or deterioration of a foundation due to water damage. Any natural disaster that could weaken a building's or structure's integrity, coupled with inadequate building conditions, could result in collapse.

CONCORD BUILDING/STRUCTURE COLLAPSE EVENTS	
Probability -	Moderate
Severity -	Low
Overall Risk -	2.67

Area Events

Building and structure collapse, although not common, can result from flooding, heavy snow buildup on rooftops, and weakened structural integrity due to fire. Building and structure collapse are more likely to occur in older, less stable structures which are located in sensitive locations.

- Tornado of July 24, 2008
In Epsom, various homes and outbuildings sustained damage on or near Northwood Lake, especially Lake Drive and Sleepy Hollow Lane. *Epsom Hazard Mitigation Committee 2009*

Events in Concord

These hazard events were found to have directly impacted Concord.

- Circa 1973
A building on Pitman Street collapsed due to snow loading. *Concord Fire Department*
- Unknown Date
A structure collapsed during construction at Durgin Lane. *Concord Fire Department*
- January - February 2008
Heavy snowloads caused multiple building collapses, including Oak Bridge Condominium Pool Building, Beede Electric, Hall Street Capitol Distributors loading dock. *Concord Hazard Mitigation Task Force 2011*
- Circa 2008
The roof of the Administrative Building at Transformer Services Inc (TSI) on Regional Drive collapsed due to fire. The collapse occurred because of lightweight truss issues. *Concord Hazard Mitigation Task Force 2011*

Potential Future Hazards

Snowloading is of particular concern for building or structure collapse in Concord. Nearly all of the buildings on Main Street and in the downtown are older in construction and some have not been renovated to meet modern standards.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Power/Utility Failure

Utilities systems exist everywhere and are subject to damage from construction work, accidents and extreme weather. Many utilities are protected by back-up generators to prevent failure, whatever the cause may be. Nuclear power plants produce roughly 20% of the nation's power, they exist in nearly all states and 3 million Americans live within 10 miles of a nuclear power plant. The greatest risk to life resulting from a nuclear power plant failure is radiation contamination resulting from radiation release into the environment. People in the immediate vicinity are at greatest risk of radiation contamination. Another common source of energy, coal, can be potentially hazardous because coal power plants emit chemicals such as mercury and sulfur dioxide.

CONCORD POWER/UTILITY FAILURE EVENTS	
Probability -	High
Severity -	Low
Overall Risk -	4.00

Area Events

New Hampshire contains nuclear and coal power plants. There are two coal power plants in New Hampshire: Merrimack Plant in Bow and Schiller in Rockingham County. The Merrimack Station Power Plant is the largest coal-fired electrical generating station owned by PSNH. It supplies power to 189,000 residents. The greatest health concern over the Merrimack Plant in Bow is the release of mercury into air and area water bodies, such as the Merrimack River.

In addition to PSNH, customers in Concord receive electricity from the Unitil Companies, which is a public holding company whose subsidiaries provide, among other services, gas and electric utility distribution operations. KeySpan Energy Delivery is a gas company that serves approximately 75,000 customers in southern and central New Hampshire, including Concord. In addition, New Hampshire and Concord Steam provides steam service to approximately 125 commercial and industrial customers in Concord.

In the harsh environment that New Hampshire residents are subjected to, power and utility failures on an isolated level are not uncommon. During nearly every heavy snow storm, ice storm, or other severe weather event, someone, somewhere, loses power and/or other utilities.

- November 9, 1965
Northeast Blackout of 1965. The New York- New England grid was not prepared to handle an overload caused by a blown relay and the entire region, from Pennsylvania to New Hampshire and Vermont, was in the dark for a short period of time. The huge effort of re-establishing energy began immediately following the event. The blackout affected the western portion of the state, while the eastern portion and Maine experienced no power failure. *Central Maine Power*
- February 18, 2006
55 mph wind gusts, resulting from a cold front in the region, felled trees which blocked roads and downed power lines. 80,000 homes and businesses in the state reportedly lost power. Unitil had outages in every town it serves. A reported 25,000 customers in the Concord area lost power. *Concord Monitor*

Events in Concord

These hazard events were found to have directly impacted Concord.

- November 6, 2004
High winds downed trees, leaving thousands in NH without power. Trees fell on power lines and equipment. Unitil Energy Systems reported 550 customers without power in Concord and Bow.
- March 9, 2005
Cold, fierce, 40+ mph winds and near-blizzard conditions caused power outages for 550 Unitil customers on Stickney Hill Road and Hopkinton Road. *Concord Monitor*
- September 30, 2005
High winds and heavy rains downed trees, causing power outages in the area. 13,000 PSNH customers lost power. At least 1,400 of the 13,000 customers were located in Concord and Canterbury. *Concord Monitor*
- February 18, 2006
55 mph wind gusts, resulting from a cold front in the region, felled trees which blocked roads and downed power lines. 80,00 homes and businesses in the state reportedly lost power. Unitil had outages in every town it serves. A reported 25,000 customers in the Concord area lost power. *Concord Monitor*
- December 12, 2008
Hundreds of thousands of home and business owners in the State were without heat or electricity after an ice storm moved through the State causing the largest power outage in New Hampshire's history. Unitil had 5,000 customers out in Concord. A large amount of FEMA funds were received for snow and ice removal from streets and sidewalks as well as removing trees and limbs off streets when they came down with ice on them. *Concord Monitor, Concord Hazard Mitigation Task Force 2011*
- High Wind Event, February 25-March 1, 2010
In Concord, 2,000 Unitil customers were out of power at the peak outage period. Unitil opened their emergency operations center, and the City opened their EOC for a few hours. Problems included Interference with electrical lines, trees down, and road blockages. Crews were out clearing the entire period. Wind Storm caused power/utility failures, road closures from downed power lines and trees, home and property damage. Some resident's homes were without power for several days. *Unitil Energy Systems and Concord Hazard Mitigation Task Force 2011*
- Summer 2010
Substation transformer failure at the office on McGuire Street (West Concord substation) affected Penacook Street. Unitil lost 1,600 customers for 8 hours during this time. *Unitil Energy Systems 2011*
- October 2010
The City facilities experienced communications failure when the City's dispatch unit had a power failure at 24 Horseshoe Pond. The City's internet and phone went down as well as most Police, EMS, and Fire communications. The cause was oversight in

power where the transformer was lost. The Fire Department is currently working on alternate dispatch site. *Concord Hazard Mitigation Task Force 2011*

Potential Future Hazards

Power failure may be more likely to occur during severe winter or summer weather. The two largest power use days in recorded history recently occurred in July 2006 in Concord.

If State of New Hampshire stopped purchasing steam from Concord Steam, that would render Concord Steam unviable and unable to produce heat and hot water for the Downtown. Alternatives should be sought in the event of this occurrence.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

In Concord and New Hampshire, residents are used to normal wind/ice storm events, many of which knock out power for a number of hours or a couple of days. Residents use generators, wood or gas stoves, and have supplies on hand until the power is restored. The City will open its shelter when needed.

Extreme Air Pollution

Air pollution is the release of gases, finely divided solids or finely dispersed liquid aerosols into the Earth's atmosphere that exceed the capacity of the atmosphere to dissipate them or dispose of them into the biosphere. Volcanic activity is the greatest source of air pollution, however, dust storms, wildfires and vehicle exhaust also greatly contribute to air pollution. Humans are at risk of respiratory illnesses due to increased air pollution.

CONCORD EXTREME AIR POLLUTION EVENTS	
Probability -	Low
Severity -	Low
Overall Risk -	1.00

Area Events

The New Hampshire Department of Environmental Services conducts daily air quality forecasts for the entire state. Forecasts are based on Ozone and Particle Pollution. Levels of air quality range from "Good"- no health impacts expected- to "Hazardous"- everyone should avoid all outdoor exertion. Email alerts from the NHDES are available on days when the air quality is predicted to reach unhealthy levels.

Extreme air pollution affects New Hampshire citizens 10 days during an average year. Although New Hampshire does not cause most of the pollution that affects its citizens, large urban areas to the south and large power plants in the Midwest produce the emissions that are brought to the state by atmospheric winds. New Hampshire has little control over the extreme air pollution in the state. It can be assumed that in the future air pollution in the state will worsen.

- September 14, 2005
The Department of Environmental Services declared air-quality action days in the state for 9/14 and 9/15 because of an increase in air particles due to slow moving, stagnant air masses from the Ohio Valley. High temperatures can contribute to decreased air quality. The DES advised people to limit all outdoor activities. *Concord Monitor*

Events in Concord

- No details on specific events were found during research on Concord.

Potential Future Hazards

Concord residents can do little to reduce extreme air pollution. No one location in the city is more susceptible than another. Monitoring the air quality action days and staying indoors on days with a high level of pollution is the best way to protect residents. One particular issue of concern to the Department of Environmental Services is the (Wheelabrator) Concord Municipal Solid Waste (MWS) Incinerator, one of nine operating in the state. There is a public health and environmental concern related to MSW incinerators because of the emissions of acid gases, particulate matter, carbon monoxide, nitrogen oxides, metals, dioxins and furans. The Concord MSW Incinerator has a maximum permit capacity of **210,000** tons per year of solid waste. It began operating in 1989 and serves 28 municipalities. The facility operates 24 hours a day and is approaching its maximum capacity.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Radiological Accident

Radiological accidents occur primarily at nuclear power plants when radioactive gases are released. They can cause widespread contamination to people and ecosystems as were the cases in Chernobyl and 3-Mile Island. Their cleanup may take centuries because of the extreme saturation of contaminants in the soil, in buildings and in water supplies.

CONCORD RADIOLOGICAL ACCIDENT EVENTS	
Probability -	Low
Severity -	Low
Overall Risk -	1.00

Area Events

The Central New Hampshire region is geographically located between Vermont Yankee Nuclear Power Plant in Vernon, VT and the Seabrook Nuclear Station in Seabrook, NH. These facilities present the greatest risk of radiation contamination to the region in the case of a meltdown or other catastrophic event. As more nuclear facilities are decommissioned, the mobilization of nuclear wastes will increase, augmenting the risk of exposure. Small underground shelters or concrete basements may provide a level of protection. Personal household supplies of iodide, purchased in advance, can help limit the uptake of radiation in the thyroid.

- No details on specific events were found during research on the region.

Events in Concord

- No details on specific events were found during research on Concord.

Potential Future Hazards

Concord is not in either the evacuation area or the plume area of the Seabrook and Vermont Yankee facilities. Major transportation routes convey trucking carrying radioactive materials through the City. No accidents to date are known. Construction waste and medical community (low) waste are considered low risk. The Wheelabrator MSW Incinerator likely scans materials incoming, as does Advanced Recycling and other metal recycling facilities.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Fuel/Resource Shortage

Current popularly-used sources of energy, such as petroleum, are limited and their production levels are variable, therefore they are prone to shortages and will continue to be so in the future. Fuel and resource shortages are also due to rises in demand. As different regions of the world develop they will need more fuel. Fuel and resource shortages are evident in the rising costs of energy.

CONCORD FUEL/RESOURCE SHORTAGE EVENTS	
Probability -	Moderate
Severity -	Low
Overall Risk -	2.67

Area Events

Fuel and resource supplies are often dictated by international geopolitical events, as was the case in 1973, and weather events such as hurricanes in the Gulf of Mexico, therefore it is difficult to predict future hazards that may affect the central New Hampshire region. Nevertheless, any major weather event occurring in the south during hurricane season or a particularly cold winter in the northeast, can and will impact the fuel and resource supply in Concord and the entire region. In addition, as made evident in recent months, political instability in oil producing countries and foreign policy do affect fuel supply in the United States.

- 1973
The OPEC nations halted exports of oil to the Western nations that supported Israel during a conflict known as the Yom Kippur War, which uncovered the actual power OPEC had on the world's energy business. In the United States, a massive shortage led to high fuel prices and near chaos. The incident caused the U.S. to seriously consider its energy situation and energy independence. *Canadian Economy Online*
- August 31, 2005
Gasoline prices rose between 40 and 50 cents in Hurricane Katrina's wake and there was concern that in many regions gasoline wouldn't even be available to consumers. President Bush stated that the natural disaster "disrupted the capacity to make gasoline and distribute gasoline". *The White House Office of the Press Secretary, August 31, 2005*
- April, 2006
MSNBC released the article: "Gasoline Supply Problems Hit U.S. East Coast". The article began by stating: "Scattered gas stations from New Hampshire to Virginia are facing temporary shortages as the industry grapples with a transition to more ethanol-blended fuel." The cause of the fuel shortage was due in large part to logistical and transitional difficulties as terminal owners were required to switch to the higher ethanol-content gas. *MSNBC website, April 21, 2006*

Events in Concord

- April 2007
Rumford Energy oil went out of business, filing bankruptcy, with pre-paying customers losing their money. The company owed at least \$1million dollars to more than 1,000 customers. *Concord Monitor 05/18/07*

Potential Future Hazards

The City has seen skyrocketing gas prices in 2006, 2010 and 2011. If the prices continue to rise, potential economic consequence of increased fuel prices may be seen. The Public Service of New Hampshire power generation plant in Bow runs on coal, and if the facility, which serves most of the Northeast, experienced a shortage of coal, Concord would be one of a multitude of communities affected by the problem.

The City itself is experiencing higher fuel costs for their vehicles to operate. Their primary source of fuel is at 311 North State Street at the City's operations/maintenance facility. The backup fuel location is at the Heights Fire Station on Loudon Road. Redundancy is working well at this time.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Strike

A strike is the collective refusal to work under unfavorable conditions set by employers. Employees who wish to express their disdain for low wages, long hours or poor working conditions will often strike as a group in order to make a greater impression on an employer, the public or the media.

CONCORD STRIKE EVENTS	
Probability -	Moderate
Severity -	Low
Overall Risk -	2.67

Area Events

Strikes are most common of employees of public institutions and private businesses. Strikes have the potential to disrupt business, schools and/or government.

- 1922
A nine month strike occurred in Manchester, NH at the Amoskeag Manufacturing Company over wages and hours. *Source undocumented*

Events in Concord

- No details on specific events were found during research on Concord.

Potential Future Hazards

A strike occurring at Concord Hospital would affect the City greatly, as it would all of the area communities regularly using the facility for their medical needs. Utility strikes would affect the most number of people. If Until (electricity) went on strike, a business continuity plan would help keep operations moving. A National Grid (natural gas) would affect the City, as well as Concord Steam (electricity) as its service area is Downtown/Main Street.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Business Interruption

Business interruption may occur following a natural disaster or catastrophe, such as a hurricane, fire or flood. Occasionally, businesses are forced to temporarily close their operations in order to make necessary repairs caused by damage or to relocate. During a period when a business is interrupted, it may lose money to competitors, causing further economic hardship.

CONCORD BUSINESS INTERRUPTION EVENTS	
Probability -	Low
Severity -	Low
Overall Risk -	1.00

Area Events

Significant employers in the region, many of which provide crucial services or goods, have the potential to be incapable of opening for business if a disaster were to occur. In other cases, hazards have the potential to seriously affect a families' financial stability when small, family-owned businesses are interrupted. Most recently, during the May 2006 floods in the central New Hampshire region, numerous area businesses experienced interruptions. Several businesses are highlighted below.

- May 10, 2005
A February fire at Bowie's Market in Bradford caused a two and a half month business interruption as Bruce Bowie and family relocated their market to the town of Andover. The Bowie family was out of work during the interruption. They eventually relocated to an East Andover location where they had previously done business. *Concord Monitor*
- December 2008
Businesses throughout New Hampshire were affected by the ice storm.

Events in Concord

These hazard events were found to have directly impacted Concord.

- May 15, 2006
The St. Paul's School Graduation was cancelled and classes were also cancelled two weeks early because of flood damage at the school. Conditions were unsafe for students, faculty and staff. The flooding interrupted services at St. Paul's for the remainder of the school year. *Concord Monitor*
- May 30, 2006
An article in the Concord Monitor, published May 30, 2006, described the business interruption experienced by some local area businesses. Pitco Frialator, Blue Seal Feeds and Grappone Auto Dealerships were affected by the high water levels. At Pitco Frialator, within a week everything was back to normal. At the Concord Business Center, 45 businesses that rent space were not able to work for 2 days. Over 140 businesses reported damage to the state. Farms, orchards and greenhouses were hardest hit. *Concord Monitor*

Potential Future Hazards

Local business fires, including Dunkin Donuts on South Main Street, Friendly's on Loudon Road, and Ordway's Market on South Street, have temporarily interrupted the economic flow at those isolated locations. Wide scale flooding has also interrupted businesses. In most situations, business is resumed after repairs are made to the facilities. If Concord Steam or other utilities in the Downtown ceased to serve the area, Main Street and Downtown would experience a significant loss of business and would be detrimental to the City. Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites. Land line telephone service in Concord is Fairpoint Communications, and if their services were disrupted residents would have to rely on cellular phones.

On October 3, 2009, the Friendly's Restaurant on Loudon Road was destroyed by a fire. Approximately 70 employees were dislocated, several found employment at other Friendly's restaurants, but several others did not return to work there. The restaurant was rebuilt and reopened in May 2010, but lost hundreds of thousands of revenue during the time which they were closed.

Financial Issues, Economic Depression, Inflation, Financial System Collapse

Financial concerns such as depression, recession, inflation and financial system collapse have previously affected the United States and most industrialized nations of the world. Both developing and industrialized nations have experienced economic depression and financial system collapse due to unpredictable changes in the stock market, inflation, geopolitics, energy prices, etc. The most memorable economic depression that has occurred in the United States was the Great Depression that began in 1929 and may not have ended until the U.S. entered WW II in 1941. Economic depression can also occur on a local level with the closing of a major company or manufacturer resulting in widespread layoffs.

CONCORD FINANCIAL SYSTEM EVENTS	
Probability -	High
Severity -	Low
Overall Risk -	4.00

Area Events

Financial concerns mentioned above are somewhat difficult to predict, especially when considered on a localized level. Economic concerns such as layoffs are fickle and can occur on a whim. Some major employers in the region with great influence are: Shop & Save Grocers-Concord, Graphic Packaging-Concord, Precision Technology Inc.-Pembroke, CAIMS Protective Clothing-Pittsfield, Concord Hospital, Grappone Auto Dealerships-Concord and Pitco Frialator in Concord.

- April 27, 2006
In Franklin, 172 workers were laid off from Polyclad Laminates. *Concord Monitor*
- April 30, 2006
It was reported that China Mill in Suncook plans to lay off 58 of its 150 workers in June of 2006. *Concord Monitor*
- Summer 2009
Precision Technology in Pembroke closed suddenly without the required 60 days notice under the federal Worker Adjustment and Retraining Notification Act and owed their 131 employees money. The business printed and bundled fliers and inserts for mass mailings. The State assisted the workers in obtaining what was owed. *Concord Monitor 10/5/10*

Events in Concord

These hazard events were found to have directly impacted Concord.

- Miscellaneous Dates
Significant employers in Concord have closed their doors in the last few decades: Rumford Press (1980's), OD Hopkins, Sprague Electric, and the Allied Tannery in Penacook Village. Jefferson Pilot downsized its operations. *Concord Fire Department*

Potential Future Hazards

When one large employer goes out of business, repercussions are felt through unemployment, business loss, taxes, etc.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Communications Systems Interruptions

Communications systems, like utilities, are found everywhere and are subject to damage by construction work, severe weather and traffic accidents. Because communications systems depend on electricity, any power outage may cause an interruption in a communications system. In addition, many communications systems have buried cables which are particularly vulnerable to being cut. Communications systems interruptions can negatively impact a region, town, neighborhood or household in the case of a natural disaster, catastrophe or other emergency.

CONCORD COMMUNICATIONS SYSTEMS INTERRUPTION EVENTS	
Probability -	High
Severity -	Low
Overall Risk -	3.00

Area Events

Communications systems are as prone to failure as power. Power lines often share cables and poles with communications systems. When power fails, cable and telephone services frequently fail as well. The largest telecommunications provider in Concord is Verizon. Broadband service is offered by Verizon and other companies such as Comcast and Fairpoint. Statewide, there are approximately 30 active competitive local exchange carriers and over 100 in-state toll providers.

- September 30, 2005
High winds and heavy rains left thousands without power. In Bow, the radio station WTPL 107.7 FM lost power for 2 hours. *Concord Monitor*
- Circa 2003
A Verizon failure in Manchester affected the State's 911 dispatch. *Concord Fire Department*

Events in Concord

These hazard events were found to have directly impacted Concord.

- October 2010
The City facilities experienced communications failure when the City's dispatch unit had a power failure at 24 Horseshoe Pond. The City's internet and phone went down as well as most Police, EMS, and Fire communications. The cause was oversight in power where the transformer was lost. The Fire Department is currently working on alternate dispatch site. *Concord Hazard Mitigation Task Force 2011*

Potential Future Hazards

In Concord, minor failures occurred where backup systems were in place. In some events, both land line and cell phone service fails.

Due to a severe weather event, sometimes a remote tower comes down which affects the ability to communicate. Redundant systems are in place, and towers are placed in other areas. However, when one goes down, a black hole exists in certain spots.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

HUMAN HAZARD EVENTS IN CONCORD

Events of this nature include economic collapse, general strike, terrorism (ecological, cyber and chemical), sabotage, hostage situations, civil unrest, enemy attack, arson, mass hysteria, and special events. While relatively uncommon, they are all caused by direct human action.

Economic Threats

Identity theft and crimes against financial institutions pose an economic threat to all citizens. These threats include bank fraud, debit and credit card fraud, telecommunications and computer crimes, fraudulent identification, fraudulent government securities, counterfeiting, and electronic fund transfer fraud. These crimes can have drastic economic impacts upon an individual, family, business or organization.

CONCORD ECONOMIC THREATS EVENTS	
Probability -	Moderate
Severity -	Low
Overall Risk -	2.67

Area Events

Economic threats such as those mentioned above can indeed threaten an individual, family, business or organization. Recently, identity theft and fraud have become matters of great concern for people wishing to protect their identity and investments.

- November 2009
The Meredith Financial Resources Mortgage Service, which suddenly declared bankruptcy, was declared a front for a massive Ponzi scheme that may have cost investors as much as \$100 million. The money was supposedly placed in trusts and used to finance construction projects. Investors' money may have instead been used to pay interest to earlier investors, rather than financing the construction projects they claimed to back. Officials with the New Hampshire Department of Justice, the U.S. attorney's office, the FBI, and state banking and securities regulators continue to investigate the case. *Concord Monitor, December 2009*

Events in Concord

These hazard events were found to have directly impacted Concord.

- 2005-2011
Fraud is a regular crime reported to the Concord Police Department. Reports filed in 2005 (144), 2006 (172), 2007 (197), 2008 (200), 2009 (219), 2010 (178) and 2011 (100 as of 06-15-10) included credit card fraud, check fraud, bank fraud, and similar types of fraud. *Concord Hazard Mitigation Update Task Force 2011*

Potential Future Hazards

The citizens of Concord are potential victims of economic threats, but no more so than citizens of other towns and cities in New Hampshire and beyond. Personal education about options and protection measures is key to individual financial protection.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

General Strike

A general strike is the stoppage of work by a significant proportion of workers over a broad range of industries in an organized effort to achieve economic or political objectives. A general strike is a form of social revolution.

CONCORD GENERAL THREAT EVENTS	
Probability -	Low
Severity -	Low
Overall Risk -	1.33

Area Events

Strikes which would affect the area could occur at public and private institutions and at those businesses which supply goods and services to consumers.

- May 1, 2006
The most recent general strike that occurred in the United States and New Hampshire was the 'Day Without Immigrants' strike during which both legal and illegal immigrants, in a show of solidarity, boycotted businesses and did not work or go to school in order to demonstrate the economic impact immigrants have on the United States. Events in New Hampshire were held at Dartmouth College and City Hall Plaza, Manchester.

Events in Concord

- No details on specific events were found during research on Concord.

Potential Future Hazards

General strike scenarios to date have not impacted the community. The local economy could be affected if this were to occur.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Terrorism

The use of force or violence against people in order to create fear, cause physical harm and/or intimidation or for reasons of ransom. Terrorists often make threats in order to create fear and change public opinion. Cyber terrorism consists of hackers who threaten the economy by attacking the intricate computer infrastructure, affecting business and communication. Biological and chemical terrorism refers to those infectious microbes or toxins used to produce illness or death in people or animals. Terrorists may contaminate food or water, thus threatening an unprotected civilian population. Eco-terrorism refers to the destruction of property by persons who are generally opposed to the destruction of the environment or to make a visible argument against forms of technology that may be destructive to the environment.

CONCORD TERRORISM EVENTS	
Probability -	Moderate
Severity -	Low
Overall Risk -	2.67

Area Events

The following acts of terrorism are considered so because of their intent to create fear and also for their political motivation.

- August 1997
Five people were left dead after a series of shootings which began in Bow by a man who was angered over long simmering land disputes. The individual was eventually apprehended in Colebrook, NH. *NH DOS- Bureau of Emergency Management*

Events in Concord

These hazard events were found to have directly impacted Concord.

- October 27, 1998
The lit fuse of a bomb left in the Concord Library stacks set off smoke alarms that may have saved the lives of many people. The individual allegedly responsible for the bomb scare left notes complaining about state government. A second bomb was later found on the State Library steps. *NH DOS- Bureau of Emergency Management*
- October 1998
About a dozen buildings were evacuated after the New Hampshire Technical Institute in Concord received an anonymous call warning that three bombs had been placed on campus. This event followed the bomb scares at the Concord Library. *AP Online, 11/01/98*
- October 2001 to February 2002
The community responded to many suspicious package and substance calls as a result of the introduction of anthrax spores into US Postal facilities elsewhere in the country. *Concord Fire Department*
- October 2010
A bomb threat was called in to Concord Hospital as a result of a child custody issue and the group knows as the "Oathkeepers." The FBI was contacted, but nothing was found in the Hospital during a bombsweep. Phonelines were flooded with calls by the Oathkeepers to inhibit using the landlines. The incident was determined to be harassment instead of an actual event. *Concord Hazard Mitigation Task Force 2011*

Potential Future Hazards

First Night activities have been cancelled as a result of terrorism following an event, such as the 1998 bombs. Chemical, biological, explosive, radiological events are possible terrorism tactics.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites. Special events are displayed in **Table 1** and **Table 1A**.

Bomb threats are received at the High School regularly, but these are not publicized. Concord Hospital receives bomb threats regularly as well, but they have internal procedures in place to handle the situation and do not contact the Police Department every time.

The State House, NH Office Park South, the NH Supreme Court, Federal District Court, Merrimack County Superior Court, Concord District Court, and potentially City Hall would be a potential risk for terrorism or bomb threats, as would be the State Office Complex on Hazen Drive and the Concord Feminist Health Care Center.

Sabotage

Sabotage is a deliberate action aimed at someone or some institution in order to weaken that person's or institution's integrity and reputation through subversion, destruction, obstruction or disruption. Sabotage may occur in war, a workplace, in the natural environment, as a crime, in politics or as a direct attack against an individual.

CONCORD SABOTAGE EVENTS	
Probability -	Moderate
Severity -	Low
Overall Risk -	2.67

Area Events

Sabotage is an isolated event and is nearly impossible to predict. Sabotage can infiltrate a business, organization or individual from any part of the world because of modern technology.

- October 2000
A former help desk worker at a Portsmouth, NH company was found guilty by federal prosecutors of network sabotage for hacking into the company's system after being fired and deleting important documents. *U.S. Department of Justice Press Release. June 18, 2001*
- November 5, 2002
A group of Republicans plotted to commit political sabotage by jamming a series of Democratic phone banks on Election Day. Two former Republican officials have been sentenced to federal prison for the crime. *Concord Monitor, June 16, 2006*
- Circa 2009
State of NH's credit card sales data was recently hacked. *Concord Fire Department*

Events in Concord

- No details on specific events were found during research on Concord.

Potential Future Hazards

Any incident of sabotage in Concord could come from within Concord or any nearby town. Because of computer networks, sabotage could occur from any location in the world. No particular risk was identified, although it is acknowledged sabotage could occur at any time.

The City runs on an intranet system, and has vast amounts of data they work with. This data is backed up, although sabotage would cause havoc and difficulty operating with the current data until the problem was fixed.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Hostage Situation

A hostage situation is an incident where an innocent civilian is held by someone or some group of persons demanding something from another person or group of persons not related to the person or persons being held hostage. The person or persons held are done so pending the fulfillment of certain terms.

CONCORD HOSTAGE SITUATION EVENTS	
Probability -	Moderate
Severity -	Low
Overall Risk -	2.00

Area Events

Hostage situations can occur anywhere, including banks, schools, governmental facilities, institutions, prisons, and in other locations.

- October 15, 1971
In Nashua, a man held another man hostage at gunpoint and demanded to see the Chief of Police. The acting Chief arrived at the scene and was immediately shot by the man holding the other man hostage. The acting Chief died 12 days later. *City of Nashua, NH website*
- October 2007
In Rochester, a man held three people working for Hillary Clinton's presidential campaign hostage with a bomb and demanded to speak with Senator Clinton. Local police, State Police, and the FBI address the situation and took the man into custody without incident. *News Reports*

Events in Concord

- No details on specific events were found during research on Concord.

Potential Future Hazards

Hostage situations are isolated events and are therefore nearly impossible to predict. The NH State Correctional Facility on Route 3 (North State Street) and the Merrimack County Jail in Boscawen on Route 3 could be likely targets. The City Hall, Courtrooms, and the Federal Building could be likely targets. The Elementary Schools, Middle School, or High School could be host to hostage situations. These events could occur on private property or in homes, and the Police Department would have to adapt to each unique situation.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Civil Disturbance / Public Unrest

This hazard refers to types of disturbances that are caused by a group of people, often in protest against major socio-political problems including sit-ins or protests against wars and any general and public expression of outrage against a political establishment or policy. Examples of civil disturbance include protests of the WTO and G8 meetings and large-scale sit-ins to protest against the Iraq War. Many instances of civil disturbance and public unrest are quelled by a use of force from police. Participants may be victims of personal injury in severe cases.

CONCORD CIVIL DISTURBANCE EVENTS	
Probability -	Moderate
Severity -	Low
Overall Risk -	2.00

Area Events

The most probable locations of larger civil disturbance and/or protest in the State are at the State House in Concord and at the universities and colleges. They have also occurred at controversial locations, such as feminist health centers. The Concord Feminist Health Center was the victim of arson in 2000.

- January 1998
Between 500 to 600 University of New Hampshire students took over an intersection in Durham. The use of force by police and fire crews was required in order to dissipate the potential risk of further unrest and potential injury due to violence. Several students were treated after being sprayed with pepper spray. *"Civil Unrest in Durham: Lessons Learned", Fire Service News, NH Fire Academy, Volume XVII, Number 1*
- October 2003
Anti-abortion group protests school's sex education program in Goffstown. The anti-abortion protestors were affiliated with Hillsborough County Right to Life. The intent of the group was to express their view that the sexual education curriculum in the district was inappropriate. *Siecus Public Policy Profile, State Profile of New Hampshire*

Events in Concord

- No events have been found during research on Concord.

Potential Future Hazards

Quiet, nonviolent protests and picketing which do not cause alarm or disruption regularly occur in Concord. As the seat of State, county and some federal government offices, there is a potential for civil unrest scenarios to occur. Demonstrations in front of the State House regularly occur, although to date they have been peaceful.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Enemy Attack

Enemy attack, although unlikely, has previously occurred on American soil and may occur in the future. The most memorable enemy attack of recent years was the 9/11/2001 attack against the World Trade Center in New York and against the Pentagon. Much effort is being made by the Government to prevent an enemy attack before it occurs by collecting intelligence on potential enemies of the United States.

CONCORD ENEMY ATTACK EVENTS	
Probability -	Low
Severity -	Low
Overall Risk -	1.00

Area Events

The area does have a number of potential targets which may be attractive to enemy attack, including Vermont Yankee and Seabrook Nuclear Power Plants, the Franklin Falls, Hopkinton-Everett, and Blackwater Dams, and the State Office complexes in Concord.

- No details on specific events were found during research on the region.

Events in Concord

- No details on specific events were found during research on Concord.

Potential Future Hazards

The threat of enemy attack on Concord is consistent with national and international threats, but no greater than other towns and cities in New Hampshire and beyond. Personal education about options and protection measures is key to individual protection.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Arson

The unlawful and intentional damage, or attempt to damage, any real or personal property by fire or incendiary device. Arson is a crime that can have grave economic repercussions, cause great property damage and cause personal injury or death.

CONCORD ARSON EVENTS	
Probability -	High
Severity -	Moderate
Overall Risk -	5.00

Area Events

Many fires are difficult to prove as cases of arson because building/structure collapse permanently conceals evidence and arson can be as simple as throwing a cigarette butt in brush from a moving car. Fire Investigators regularly determine the cause of fires, some of which are determined as arson events.

- August 8, 2005
Three Claremont teens were indicted on charges that they threw a bomb at an unoccupied house which caused major damage. *Concord Monitor*
- January 15, 2007
According to investigators, a fire that destroyed a senior center in Hopkinton under construction appeared to be caused by arson. The two-story building was being framed and was set to open in the spring. *Concord Monitor*

Events in Concord

These hazard events were found to have directly impacted Concord.

- May 29, 2000
The Feminist Health Center in Concord was the site of a fire determined to be arson. An accelerant was used. The Center did not experience an interruption of business. *An open letter from the Concord Feminist Health Center*
- Fall and Winter of 2003
A series of intentionally set fires hit Concord's South End over a period of 6 months. The fires caused considerable damage to several outbuildings and garages. The joint investigation of the Concord Fire and Police Department included the services of the FBI Crime Analysis Unit in Quantico, Va. The fires remain unsolved. *Concord Fire Department*
- December 9, 2005
A late night fire took the life of a Concord resident at 282-284 North State Street. Subsequent investigation by Concord Police and Fire Departments, as well as the NH State Fire Marshal's Office determined the fire to be arson. The case remains open. *Concord Fire Department*
- January 11, 2005 and March 14, 2006
Two separate intentionally set fires caused damage to two different businesses at a Manchester Street location. These fires caused business interruption, lost wages and income and needlessly risked the health and safety of fire department members. These fires remain unsolved. *Concord Fire Department*
- Date unknown

A downtown area rooming house was the target of an arsonist in this early morning fire. Two separate fires were set at the exits of this three story building housing some 20 residents. An intensive investigation by Concord Police and Fire Departments resulted in the arrest and subsequent conviction of the responsible individual. *Concord Fire Department*

Potential Future Hazards

The individuals who respond to the events are potentially at risk from arson fires. Older structures which are not separated or contain sprinkler systems, such as in the Downtown, are most vulnerable. The B&M railroad properties on Langdon Street have a risk of arson due to vagrants which stay at the facilities. Arsons due to building foreclosures could be an issue in the future depending on the direction of the economy.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites. Historic tables

Mass Hysteria

The collective hysteria (shared hysterical or sociopsychological symptoms) experienced by more than one person. Mass hysteria may occur when a group witness a particular traumatic event and experience the same nauseating symptoms or react similarly. Examples of mass hysteria include such cases as rioting and frenzy, particularly following large-scale accidents or terrorist attacks.

CONCORD MASS HYSTERIA EVENTS	
Probability -	Moderate
Severity -	Low
Overall Risk -	2.67

Area Events

Mass hysteria events are more likely to occur in large population centers. Concord itself hosts a population of 42,695 and holds many annual events which draw thousands of people. In the nearby area the New Hampshire Motor Speedway in Loudon hosts thousands during race events. Significant annual area events are listed in [Table 3](#).

- No details on specific events were found during research on the region.

Events in Concord

- No details on specific events were found during research on Concord.

Potential Future Hazards

Events of mass hysteria would likely be the result of terrorism events and public health events. Locations where large numbers of people gather are listed in [Table 3](#) and [Table 3A](#). Outbreaks of mass hysteria in these areas may be more difficult to safely manage. The New Hampshire Motor Speedway in Loudon could be an issue in the future because of the number of people at its facility, both campers and day-spectators.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites.

Special Events

Events draw large numbers of people to area hotels, stores, restaurants and streets, generating increased revenue for local businesses. Large gatherings of people can influence behaviors of groups which may result in mass hysteria, or may become a target for a form of terrorism.

CONCORD SPECIAL EVENTS	
Probability -	Moderate
Severity -	Low
Overall Risk -	2.67

Area Events

Many special events around Concord have a significant impact on the number of people in any given location on any particular day. **Table 3** summarizes the major annual events that directly or indirectly impact the entire region.

Table 3
Significant Area Annual Events

Event	Date	Number of People	Location
Hopkinton State Fair	September (Labor Day wknd)	40,000 - 50,000 total	Hopkinton - State Fairgrounds
Laconia Motorcycle Rally Week	June (week before Father's Day)	100,000 - 400,000	Laconia, Weir's Beach, Lakes Region area
NH Motor Speedway: Motorcycle Weekend	June (Father's Day week)	15,000 - 20,000	Loudon
NH Motor Speedway: NASCAR Cup Race	July and September weekends	110,000	Loudon
Warner Fall Foliage Festival	October (Columbus weekend)	5,000-20,000	Warner - Main Street/Village Area
Balloon Rally	First weekend in August	10,000	Pittsfield - Drake's Field

Source: Greater Concord Chamber of Commerce; Fire Department; Hazard Mitigation Task Force

Events in Concord

Concord holds numerous events throughout the year which generate extra traffic and require people to congregate in large numbers in small locations. **Table 3A** summarizes the major annual events held within the City. Many of these events are likely to impact surrounding communities.

Table 3A
Significant Local Annual Events

Event	Date	Number of People	Location
Annual Law Enforcement Event	Second Week in May	2,000	Concord - State House / LOB
Breast Cancer Walk	October	5,000	Throughout Concord
Concord High School Graduation	Middle of June	4,000	Concord - Memorial Field
Day after Thanksgiving Shopping	Day after Thanksgiving	Unknown	Concord - Mall Area, Loudon Road, Downtown
Downtown Market Days / Summer Music Festival	Third week in July (Wed, Thurs, Fri)	5,000 daily	Concord - Downtown
First Fridays Events	First Fridays in May, June, and July	Unknown	Concord - Main Street
UNH Law School Graduation	Middle of May	Unknown	Concord - Washington Street
Halloween Howl	Friday before Halloween	1,000	Concord - Main Street
Highland Fling	September (3 days)	1,000 daily	Concord - Downtown
Holiday Magic Parade	November	1,000	Concord - Heights
July 4 Fireworks	July 4	5,000	Concord - Memorial Field
Kiwanis Parade & Fair	Second Weekend in May (Thurs, Fri, Sat & Sun)	1,000	Concord - Main Street, Everett Arena
Leaf Peeping Tourism	September/October	500-800	Concord
Memorial Day Parade	Memorial Day (observed)	Unknown	Concord - Main Street
Midnight Merriment	First Friday in December	Unknown	Concord - Main Street
NH Technical Institute Graduation	Mother's Day Weekend	1,500	Concord - NHTI
Payson Center Rock'n Road Race 5K	May	10,000+	Throughout Concord
Presidential Primary Election (media attention)	Sept - Nov 2008	Unknown	Concord - State House, Polling Places
St. Paul's School Alumni Weekend	Weekend after Memorial Day (Fri, Sat, & Sun)	2,000	Concord - St. Paul's School

Source: Greater Concord Chamber of Commerce; Fire Department; Hazard Mitigation Task Force

Potential Future Hazards

The most likely possible human hazards in Concord could include hostage situations and civil unrest. Significant annual events which occur in the City and the immediate area and attract thousands of visitors were identified in **Table 3** and **Table 3A**. Congregations of people have a more inherent disposition to become unruly, can serve as a target, or can be difficult to evacuate in an emergency. Events such as the Nascar Cup in Loudon (110,000 people), Hopkinton State Fair (40,000 +), and Motorcycle Weekend (15,000 +) were identified as having the most impact to the City, and therefore would be the most likely to be prone to a human hazard incident. The Laconia Motorcycle Rally Week is north of Concord by about 30 miles,

but the event draws between 100,000 - 400,000 people to the Lakes Region every June. Bikers can travel down Route 106 and other roads to Concord.

MAP OF POTENTIAL HAZARDS

The first map in this detailed series depicts where hazards are likely to occur in Concord. Areas where flooding regularly occurs and the floodplains are shown with wetlands and the City's water features. Areas identified as particularly susceptible to ice and snow damage are noted in addition to Concord's steep slopes (>25%). The intent of *Map 1: Potential Hazards* is to portray a picture of which areas of City may be more vulnerable to certain types of hazards and how to leave Concord in the event of an emergency.

MAP OF PAST HAZARDS

Map 2: Past Hazards identifies the locations where known natural and non-natural disasters have occurred in City. In Concord, areas of flooding, ice and snow damage, and frequent accident locations were noted on the map. The past hazard locations were primarily identified by the Mitigation Planning Task Force or through research into the hazards listed within this Chapter.

CHAPTER 3. ASSET AND RISK IDENTIFICATION

2011 PLAN UPDATE

The Hazard Mitigation Plan Revision Task Force reviewed and updated as needed each of the assets and risks tables within this Chapter. Sites were added or removed, and contact information was revised. Modifications were made to the *Hazard the Site is Most Susceptible to* column where needed. Revisions were made to the future development section, and the traffic analysis tables. The *Map 3: Assets and Risks* map series and the *Map 4: Potential Hazards and Losses* map series were also updated as needed.

INTRODUCTION

The identification of assets within a community is integral to determining what may be at risk from a natural disaster. This Chapter examines the assets in five categories: Critical Facilities, Vulnerable Populations, Economic Assets, Special Considerations, and Historic/Other Considerations.

Not only are the address and phone number, where applicable, supplied for each identified asset, the hazards to which the asset is most susceptible are listed. Hazards are primarily natural disasters, but can also include secondary disasters (such as sewer or water line rupture) or human-made disasters or emergencies (such as a vehicular accident).

In Concord, each asset can be damaged by any or all of the dozens of hazards listed in **CHAPTER 2. HAZARD IDENTIFICATION**. The majority of the assets appear on *Map 3: Assets and Risks* map series. Because of the numerous hazards each site may be susceptible to, the main hazard categories of Natural, Human, and Technological were often used in the following tables to signify the primary type of hazard susceptibility. When these general designations are not sufficient, specific hazards are alternatively listed if they are appropriate for a given site.

CRITICAL FACILITIES

Critical facilities are categorized as those City or State buildings or services that are first-responders in a disaster. Fire Departments, Police Departments, and Highway Departments, as well as the City Office, are crucial in providing and coordinating the emergency services. Other critical facilities would include hospitals and shelters. Utilities or utility features are also included because of communication and power/water service.

Table 4
Essential City Facilities

Facility Name	Address	Phone	Maps (F key)	Map Index	Hazard the Site is Most Susceptible to
Broadway Fire Station	15 Broadway	225-8664	3A & 4A	F1	Technological, Power Utility Failure,
Central Fire Station	150 North State St.	225-8659	3A & 4A	F2	Technological Power Utility Failure, Communications Systems Interruptions
City Hall	41 Green St.	225-8500	3A & 4A	F3	Power Utility Failure, Terrorism
Concord Public Library	45 Green St.	225-8670	3A & 4A	F4	Power/Utility Failure, Terrorism
Fire Department Headquarters	24 Horseshoe Pond Lane	225-8650	3A & 4A	F5	Power Utility Failure, Communications System Interruptions
General Services Department	311 North State St.	228-2737	3A & 4A	F6	Terrorism, Communications Systems Interruptions
Heights Fire Station	127 Loudon Rd.	225-8654	3A & 4A	F7	Power Utility Failure,
Manor Fire Station	46 Village St.	225-2702	3A & 4A	F8	Power Utility Failure,
Police Headquarters	35 Green St.	225-8600	3A & 4A	F9	Terrorism, Communications Systems Interruptions

Sources: Hazard Mitigation Plan Update Task Force 2011

Table 4A
Essential Governmental Facilities

Facility Name	Address	Phone	Maps (V key)	Map Index	Hazard the Site is Most Susceptible to
Meldrim Thompson Office Park East	Hazen Dr.	N/A	3A & 4A	V1	Power Utility Failure
Merrimack County Court House/Offices	163 N. Main St.	225-5451	3A & 4A	V2	Power Utility Failure, Terrorism
NH Department of Health and Human Services	Hazen Drive	271-4688	3A & 4A	V3	Power Utility Failure, Terrorism,
NH Department of Transportation	7 Hazen Drive	271-3734	3A & 4A	V4	Power Utility Failure, Communications Systems Interruptions
NH Homeland Security and Emergency Management	110 Smokey Bear Blvd	271-2231	3A & 4A	V5	Terrorism, Communications Systems Interruptions
NH Legislative Office Building	33 North State St.	271-3321	3A & 4A	V6	Power Utility Failure, Terrorism
NH Military Reservation	4 Pembroke Rd.	271-2331	3A & 4A	V7	Terrorism, Communications Systems Interruptions
NH State Fire Training Facility	222 Sheep Davis Road	271-2661	3A & 4A	V8	Technological Power Utility Failure, Terrorism, Communications Systems Interruptions
NH State House	107 North Main St.	271-1110	3A & 4A	V9	Power Utility Failure, Terrorism
NH State Office Park South	Pleasant St.	271-5555	3A & 4A	V10	Power Utility Failure
NH State Police Headquarters	33 Hazen Drive	271-3636	3A & 4A	V11	Terrorism, Communications Systems Interruptions
NH State Prison	281 North State St.	271-1801	3A & 4A	V12	Hostage Situation Communications Systems Interruptions
NH Supreme Court	1 Noble Dr.	271-2646	3A & 4A	V13	Power Utility Failure, Terrorism,
Shea Farm	60 Iron Works Rd.	271-2278	3A & 4A	V14	Power Utility Failure
US Federal Building	55 Pleasant St.	617-223-9761	3A & 4A	V15	Hostage Situation, Terrorism

Sources: Fire Department, Hazard Mitigation Plan Update Task Force 2011

Table 4B
Transportation Facilities

Facility Name	Address	Phone	Maps (T key)	Map Index	Hazard the Site is Most Susceptible to
Concord Airport	71 Airport Rd.	229-1760	3A & 4A	T1	High Wind, Lightning, Wildfire
Concord Area Transit	2 Industrial Park Dr.	225-1989	3A & 4A	T2	Severe Winter Weather
Concord Coach Lines (Bus)	30 Stickney Ave.	228-3300	3A & 4A	T3	Severe Winter Weather
Concord Coach Lines Maintenance Facility	South Main St.	N/A	3A & 4A	T4	Utility Failure
Concord Hospital Heliport	250 Pleasant Street	225-2711	3A & 4A	T5	High Wind, Lightning
Concord School Bus Transportation Dept.	311 N. State St.	225-0849	3A & 4A	T6	Severe Winter Weather, Vandalism
Merrimack Valley S.D.	106 Village St	753-6413	3A & 4A	T7	Severe Winter Weather, Vandalism
NH Civil Air Patrol	51 Airport Road	271-3225	3A & 4A	T8	High Wind, Lightning
NH National Guard Heliport	4 Pembroke Road	225-1234	3A & 4A	T9	High Wind, Lightning, Wildfire

Sources: Fire Department, Hazard Mitigation Plan Update Task Force 2011

Table 4C
Utilities

Facility Name	Address	Phone	Maps (U key)	Map Index	Hazard the Site is Most Susceptible to
B&M NE Southern Railroad	N/A	228-8580 / 800-955-9260	3A & 4A 3B & 4B	N/A	Technological, Human
City Sewer Mains	N/A	228-2740	3A & 4A 3B & 4B	N/A	Technological, Human
City Water Mains	N/A	228-2740	3A & 4A 3B & 4B	N/A	Technological, Human
Comcast (Cable) Communications Equipment	Integra Dr.	888-213-0420	3A & 4A	U1	Technological, Human
Concord Steam Corp. Office	105 ½ Pleasant St.	224-1461	3A & 4A	U2	Technological, Human
Fairpoint Central Switching Station	South St.	N/A	3A & 4A	U3	Technological, Human
Fairpoint (Telephone) Maintenance Facility	64 Regional Drive	800-446-8946	3A & 4A	U4	Technological, Human
Fairpoint Warehouse	Commercial Street	N/A	3A & 4A	U5	Technological, Human
Powerline Corridors	N/A	224-1631	3A & 4A 3B & 4B	N/A	Technological, Human
PSNH Substation 1	West of Snow Pond Rd.	N/A	3A & 4A	U6	Technological, Human
St Paul's Central Heating Plant	55-58 Dunbarton Rd.	229-4646	3A & 4A	U7	Technological, Human
Tennessee Gas Pipeline	N/A	800-231-2800	3A & 4A 3B & 4B	N/A	Technological, Human
Unitil-Concord Electric Office	1 McGuire St.	224-2311	3A & 4A	U8	Technological, Human
Unitil Substation 1-BR	30 Bridge St.	N/A	3A & 4A	U9	Technological, Human
Unitil Substation 2-WC	7 McGuire St.	N/A	3A & 4A	U10	Technological, Human
Unitil Substation 3-GU	5 Gulf St.	N/A	3A & 4A	U11	Technological, Human
Unitil Substation 4-PE	40	N/A	3A & 4A	U12	Technological, Human
Unitil Substation 6-PL	259 Pleasant St.	N/A	3A & 4A	U13	Technological, Human
Unitil Substation 8-HO	253 Loudon Rd.	N/A	3A & 4A	U14	Technological, Human
Unitil Substation 14-LA	4 Langdon Ave.	N/A	3A & 4A	U15	Technological, Human
Unitil Substation 15-WP	7 West Portsmouth St.	N/A	3A & 4A	U16	Technological, Human
Unitil Substation 16-TP	8 Terrill Park Dr.	N/A	3A & 4A	U17	Technological, Human
Unitil Substation 21-ST	159 Storrs St.	N/A	3A & 4A	U18	Technological, Human
Unitil Substation 22-IW	94 Iron Works Rd.	N/A	3A & 4A	U19	Technological, Human
Unitil Substation 23-MO	17 Montgomery St.	N/A	3A & 4A	U20	Technological, Human
Unitil Substation 24-HA	30 Hazen Dr.	N/A	3A & 4A	U21	Technological, Human

Table 4C, continued
Utilities

Facility Name (continued)	Address	Phone	Maps (U key)	Map Index	Hazard the Site is Most Susceptible to
Wastewater Pump Station (Merrimack River)	South of Portsmouth St.	N/A	3A & 4A	U22	Technological, Human
Wastewater Pumping Station (Penacook)	Hannah Dustin Rd.	N/A	3A & 4A	U23	Technological, Human
Wastewater Treatment Plant (Concord)	125 Hall St.	225-8691	3A & 4A	U24	Technological, Human
Wastewater Treatment Plant (Penacook)	Penacook Street	225-8691	3A & 4A	U25	Technological, Human, Biological
Water Storage Tank (Heights)	North of I-393	N/A	3A & 4A	U26	Technological, Human
Water Storage Tank (Penacook)	West of Winterberry Lane	N/A	3A & 4A	U27	Technological, Human
Water Storage Tank (Snow Pond)	North of Checkerberry Lane	N/A	3A & 4A	U28	Technological, Human
Water Storage Tank (West Concord)	West of Lamprey Lane	N/A	3A & 4A	U29	Technological, Human
Water Storage Tank and Pump Station	Penacook Street	N/A	3A & 4A	U30	Technological, Human
Water Supply - Audubon Society of NH	3 Silk Farm Road	224-9909	3A & 4A 3B & 4B	U31	Technological, Human, Drought
Water Supply - Bancroft Products, Inc	84 Iron Works Road	224-1130	3A & 4A 3B & 4B	U32	Technological, Human, Drought
Water Supply - Camp Spaulding	River Road	753-9337	3A & 4A 3B & 4B	U33	Technological, Human, Drought
Water Supply - Contoocook River Recharge	Contoocook River near Broad Cove	N/A	3A & 4A 3B & 4B	U34	Technological, Human, Drought
Water Supply - Jimmie's Seafood Restaurant	4 Dover Road	225-4044	3A & 4A 3B & 4B	U35	Technological, Human, Drought
Water Supply - Kids Kampus	Bog Road	N/A	3A & 4A 3B & 4B	U36	Technological, Human, Drought
Water Supply - Makris Lobster Pool	354 Sheep Davis Road	226-6588	3A & 4A 3B & 4B	U37	Technological, Human, Drought
Water Supply - Penacook Lake	Hutchins Street	225-8696	3A & 4A 3B & 4B	U38	Technological, Human, Drought
Water Supply - Shaker Road Child Care Center	95 Shaker Road	224-0161	3A & 4A 3B & 4B	U39	Technological, Human, Drought
Water Supply - Treatment Plant	53 Hutchins St.	225-8696	3A & 4A 3B & 4B	U40	Technological, Human, Drought
Water Supply - Youth with a Mission (Well #1)	339 Mountain Road	N/A	3A & 4A 3B & 4B	U41	Technological, Human, Drought
Water Supply - Youth with a Mission (Well #2)	339 Mountain Road	N/A	3A & 4A 3B & 4B	U42	Technological, Human, Drought
Water Supply Pump Station (Contoocook River)	West of Broad Cove Drive	N/A	3A & 4A 3B & 4B	U43	Technological, Human, Drought
Water Treatment Plant	53 Hutchins St.	225-8696	3A & 4A	U44	Technological, Human, Drought
Water Well Fields	Soucook River near Pembroke Road	228-2737	3A & 4A	U45	Technological, Human, Drought
Wheelabrator Trash to Energy Incinerator	11 Whitney Road	753-8411	3A & 4A	U46	Technological, Human

Sources: NH Department of Environmental Services Public Water Supplies, 20+ served; Fire Department; Unitil; Hazard Mitigation Plan Update Task Force 2011

Table 4C, Utilities, includes specific information on Unitil's locations of substations, although GIS map data was not provided. Although it was requested in 2005, digital data for the maps was not provided by Public Service of New Hampshire, Verizon, Unitil, or KeySpan.

Table 4D
Communication Facilities

Facility Name	Address	Phone	Maps (C key)	Map Index	Hazard the Site is Most Susceptible to
2 Pillsbury Street LLC Antenna/Tower	2 Pillsbury Street	715-1963	3A & 4A	C1	Wind, Lightning, Human
Associate Enterprises inc Antenna/Tower	132-146 North Main St	224-4717	3A & 4A	C2	Wind, Lightning, Human
AT& T Wireless Services/Cingular Wireless/Telecorp Realty LLC Antenna/Tower	23 Sheep Davis Road	202-223-9222	3A & 4A	C3	Wind, Lightning, Human
Capital Broadcasting INC/ DBA WKXL AM Broadcasting Tower	241 Loudon Road	225-5521	3A & 4A	C4	Wind, Lightning, Human
Capital Broadcasting Inc DBA WKXL AM Broadcasting Tower	37 Redington Road	225-5521	3A & 4A	C5	Wind, Lightning, Human
Capital Broadcasting INC/ DBA WKXL AM Broadcasting Tower	South Side of Little Pond Road	225-5521	3A & 4A	C6	Wind, Lightning, Human
Capital Center for the Arts/Nextel Communications Tower/ Antenna	44 South Main Street	N/A	3A & 4A	C7	Wind, Lightning, Human
CCTV (Television)	170 Warren St.	226-8872	3A & 4A	C8	Wind, Lightning, Human
Cingular Wireless Antenna/Tower	2 Pillsbury Street	N/A	3A & 4A	C9	Wind, Lightning, Human
Cingular Wireless Tower/Antenna	102 Little Pond Road	N/A	3A & 4A	C10	Wind, Lightning, Human
Cingular Wireless/ Tower Resource Management, Inc. Antenna/Monopole	217 Fisherville Road	508-389-1731	3A & 4A	C11	Wind, Lightning, Human
Cingular Wireless/Tower Resource Management, Inc. Antenna/Monopole	217 Fisherville Road	508-389-1731	3A & 4A	C12	Wind, Lightning, Human
City of Concord, NH COMF Antenna/Tower	311 North State Street	228-2742	3A & 4A	C13	Wind, Lightning, Human
City of Concord, NH Fire Headquarters/ Sprint/Nextel Antenna/Tower	24 Horseshoe Pond Road	225-8650	3A & 4A	C14	Wind, Lightning, Human
City of Concord/ NH Water Department Antenna/Pole	Water Tank on Rte 393, East Concord	253-4525	3A & 4A	C15	Wind, Lightning, Human
City of Concord Tower/Antenna (located in the Town of Pembroke, NH)	Jordan Hill	228-2737	3A & 4A	C16	Wind, Lightning, Human
City of Concord Tower	37 Redington Road	228-2742	3A & 4A	C17	Wind, Lightning, Human
Concord VDR Tower (Aircraft)	South of Little Pond Rd.	N/A	3A & 4A	C18	Wind, Lightning, Human
Concord Hospital Broadcast Tower/ Antenna Structure	250 Pleasant Street	225-2711	3A & 4A	C19	Wind, Lightning, Human
Crown Atlantic Company, LLC Crown Communications/ Dapergolas, John Tower/Antenna	12 Integra Drive	(724) 416-2000	3A & 4A	C20	Wind, Lightning, Human
Fire Station (City of Concord, NH) Antenna/Tower	Loudon Road	N/A	3A & 4A	C21	Wind, Lightning, Human

Table 4D, continued
Communication Facilities

Facility Name	Address	Phone	Maps (C key)	Map Index	Hazard the Site is Most Susceptible to
Fire Station (City of Concord, NH) Roof Mounted Antenna/Tower	15 Broadway	225-8650	3A & 4A	C22	Wind, Lightning, Human
Fire Station Tower/ Antennas	46 Village Street	224-0616	3A & 4A	C23	Wind, Lightning, Human
Hodges Development Corp Antenna/Tower	197 Loudon Road	N/A	3A & 4A	C24	Wind, Lightning, Human
Hodges Properties Inc Antenna/Tower	241 Loudon Road	224-9221	3A & 4A	C25	Wind, Lightning, Human
Independent Wireless One/West Tower Communication/US Cellular Antenna & Equipment	132 North Main Street	432-9187	3A & 4A	C26	Wind, Lightning, Human
Independent Wireless One	132.5-146 North Main St	432-9187	3A & 4A	C27	Wind, Lightning, Human
M & P Partners LP/Reit Mngmnt/Omipoint Tower/ Antenna	1 Eagle Square	928-1300	3A & 4A	C28	Wind, Lightning, Human
Miskoe, William & Sylvia/Granite State Public Radio Tower	109 Little Pond Road	N/A	3A & 4A	C29	Wind, Lightning, Human
Miskoe, William & Sylvia/US Cellular Antenna	102 Little Pond Road	N/A	3A & 4A	C30	Wind, Lightning, Human
Nextel Antenna	102 Little Pond Road	N/A	3A & 4A	C31	Wind, Lightning, Human
Nextel Communications Antenna/Tower	150 North State Street	228-2742	3A & 4A	C32	Wind, Lightning, Human
Nextel Communications/Green Mountain Communications tower/ antenna	107-109 Little Pond Road	N/A	3A & 4A	C33	Wind, Lightning, Human
NH Dept. of Resources & Economic Development (State of NH) Antenna/Tower	172 Pembroke Road	271-2214	3A & 4A	C34	Wind, Lightning, Human
NH State Police/ Fish & Game (State of NH) Antenna	4 Hazen Drive, Fish & Game	271-2421	3A & 4A	C35	Wind, Lightning, Human
NH State Police/ NH State Hospital OEM Roof Top Antenna	36 Clinton Street	271-2421	3A & 4A	C36	Wind, Lightning, Human
NH State Police (State of NH) Antenna Structure	Airport Road	271-2421	3A & 4A	C37	Wind, Lightning, Human
NH State Police (State of NH) Roof Top Building Mast	NH State Hospital - OEM	271-2421	3A & 4A	C38	Wind, Lightning, Human
NHPR (Radio)	207 North Main St.	228-8910	3A & 4A	C39	Wind, Lightning, Human
NH Public Radio Inc Broadcast Tower	Little Pond Road	228-8910	3A & 4A	C40	Wind, Lightning, Human
NH Public Radio Inc Broadcast Tower	Opposite 84 Penacook St	(202) 965-7880	3A & 4A	C41	Wind, Lightning, Human
NH RSA 2 partnership Pole/Antenna	197 Loudon Road	N/A	3A & 4A	C42	Wind, Lightning, Human
NH State Police (State of NH) Building Mast	10 Hazen Drive	271-2421	3A & 4A	C43	Wind, Lightning, Human

Table 4D, continued
Communication Facilities

Facility Name	Address	Phone	Maps (C key)	Map Index	Hazard the Site is Most Susceptible to
Omnipoint Holdings Lattice Tower	102 Little Pond Road	N/A	3A & 4A	C44	Wind, Lightning, Human
Omnipoint Holdings/Thomas R. Murphy Monopole & Equipment	217 Fisherville Road	(425) 378-4000	3A & 4A	C45	Wind, Lightning, Human
Omnipoint Holdings Inc./Thomas R. Murphy Monopole/Equipment	58 Locke Road	N/A	3A & 4A	C46	Wind, Lightning, Human
Omnipoint, Voice Stream Wireless/ DMA Contactors Tower/ Equipment/ Antenna	37 Redington Road	425-378-4074	3A & 4A	C47	Wind, Lightning, Human
Omnipoint, Voice Stream Wireless/ DMA Contactors Tower/ Equipment/ Antenna	37 Redington Road	425-378-4074	3A & 4A	C48	Wind, Lightning, Human
PFP Associates LTD Partnership Antenna/Tower	22 Bridge Street	(617) 680-5535	3A & 4A	C49	Wind, Lightning, Human
Pillsbury LLB/Tower resource management II Antenna	2 Pillsbury Street	508-389-1731	3A & 4A	C50	Wind, Lightning, Human
Police Headquarters Antenna/Tower (City of Concord, NH)/Former use of Police- Currently Inactive	35-41 Green Street	225-8600	3A & 4A	C51	Wind, Lightning, Human
Police Radio Site (City of Concord, NH) Antenna/Tower	107-109 Little Pond Road	225-5583	3A & 4A	C52	Wind, Lightning, Human
Public Safety-Central Fire Station (city of Concord) Antenna/Tower	150 North State Street	228-2742	3A & 4A	C53	Wind, Lightning, Human
Sprint Spectrum/ Bechtel Telecommunications Tower/ Antenna	102 Little Pond Road	422-6026	3A & 4A	C54	Wind, Lightning, Human
Sprint Spectrum LP Cell Antenna/Tower	107-109 Little Pond Road	422-6026	3A & 4A	C55	Wind, Lightning, Human
Sprint Spectrum LP Cell Antenna/Tower	123 Pleasant Street	422-6026	3A & 4A	C56	Wind, Lightning, Human
Sprint Spectrum LP Cell Antenna/Tower	58 Locke Road	422-6026	3A & 4A	C57	Wind, Lightning, Human
Sprint Spectrum LP Cell Antenna/Tower	58 Locke Road	422-6026	3A & 4A	C58	Wind, Lightning, Human
Sprint Spectrum Antenna/Tower	217 Fisherville Road	800-927-2199	3A & 4A	C59	Wind, Lightning, Human
Star Granite Co. Tower/ Antenna	41 Little Pond Road	224-5355	3A & 4A	C60	Wind, Lightning, Human
Telecorp Realty	102 Little Pond Road	N/A	3A & 4A	C61	Wind, Lightning, Human
Telecorp Realty LLC Antenna & Radio Equipment	209 Fisherville Road	N/A	3A & 4A	C62	Wind, Lightning, Human
Telecorp Realty LLC Antenna & Radio Equipment	58 Locke Road	N/A	3A & 4A	C63	Wind, Lightning, Human
Telecorp Realty LLC/Cingular Wireless/Omnipoint Communications/Purchase Realty Trust Antenna	2 Pillsbury Street	(515) 273-1208	3A & 4A	C64	Wind, Lightning, Human

Table 4D, continued
Communication Facilities

Facility Name	Address	Phone	Maps (C key)	Map Index	Hazard the Site is Most Susceptible to
Tower Resources for Cingular Wireless	58 Locke Road	N/A	3A & 4A	C65	Wind, Lightning, Human
US Cellular/ Holland & Knight LLP Antenna	201 Loudon Road	(202) 955-3000	3A & 4A	C66	Wind, Lightning, Human
US Cellular/KJK Wireless Tower	241 Loudon Road	603-498-3860	3A & 4A	C67	Wind, Lightning, Human
US Cellular/KJK Wireless Equipment/Monopole	217-219 Fisherville Road	603-498-3860	3A & 4A	C68	Wind, Lightning, Human
US Cellular Monopine Tower	241 Loudon Road	N/A	3A & 4A	C69	Wind, Lightning, Human
US Cellular Tower/Antenna	102 Little Pond Road	N/A	3A & 4A	C70	Wind, Lightning, Human
Verizon New England, Inc., Verizon, Northern New England Tel Ops/ Chamberlin Construction Antenna/Tower	12 South Street	(617) 743-5951	3A & 4A	C71	Wind, Lightning, Human
Verizon NE Inc Transformer	58 Locke Road	N/A	3A & 4A	C72	Wind, Lightning, Human
Verizon Wireless Antenna	270 Loudon Road	N/A	3A & 4A	C73	Wind, Lightning, Human
Verizon Wireless/Eastern Communications Tower	58 Locke Road	(678) 339-4271	3A & 4A	C74	Wind, Lightning, Human
Verizon Wireless/Ocean builders Tower/ Antenna	75-77 Fort Eddy Road	N/A	3A & 4A	C75	Wind, Lightning, Human
Verizon Wireless/ Todd White Flag Pole/Equipment	197 Loudon Road	(678) 339-4271	3A & 4A	C76	Wind, Lightning, Human
Voicestream Wireless	2 Pillsbury Street	425-378-4074	3A & 4A	C77	Wind, Lightning, Human
WEVO Radio/Roland Paquette Equipment	109 Little Pond Road	228-8910	3A & 4A	C78	Wind, Lightning, Human
Wireless Communication Companies Tower/ Antenna	102 Little Pond Road	N/A	3A & 4A	C79	Wind, Lightning, Human
Wirelessco LP Tower/ Antenna	Little Pond Road	(913) 315-9931	3A & 4A	C80	Wind, Lightning, Human
Wirelessco LP Tower/ Antenna	58 Locke Road	(913) 315-9931	3A & 4A	C81	Wind, Lightning, Human
WKXL (Radio)	37 Reddington Rd.	225-5521	3A & 4A	C82	Wind, Lightning, Human
WNHI - 93.3 FM (Radio)	7 Perley St.	228-9036	3A & 4A	C83	Wind, Lightning, Human
WSPS (Radio)	325 Pleasant St. (SPS)	228-0401	3A & 4A	C84	Wind, Lightning, Human
WVNH - 91.1 FM (Radio)	10 Ferry St.	227-0911	3A & 4A	C84	Wind, Lightning, Human

Source: Concord Community Development Department, 2011

Table 4D, Communication Facilities, was populated by a list and GIS layer maintained by the Community Development Department.

Table 4E
Dams

Facility Name	Status	Class	Location	Maps (D key)	Map Index	Hazard the Site is Most Susceptible to
051.13 Penacook Lake Dam	Active	H	Rattlesnake Brook	3B & 4B	D1	Dam Breach, Severe Winter Weather, Flooding
051.02 York Dam Contoocook River	Active	S	Contoocook River	3B & 4B	D2	Dam Breach, Severe Winter Weather, Flooding
051.06 Penacook Upper Falls Dam	Active	S	Contoocook River	3B & 4B	D3	Dam Breach, Severe Winter Weather, Flooding
051.25 Turkey Pond Dam	Active	S	Turkey River	3B & 4B	D4	Dam Breach, Severe Winter Weather, Flooding
051.12 Lower St. Pauls School Pond Dam	Active	L	Turkey River	3B & 4B	D5	Dam Breach, Severe Winter Weather, Flooding
051.21 Turtle Pond Dam	Active	L	TR Mill Brook	3B & 4B	D6	Dam Breach, Severe Winter Weather, Flooding
051.28 Hoit Road Marsh Dam	Active	L	TR Hackett Brook	3B & 4B	D7	Dam Breach, Severe Winter Weather, Flooding
051.43 Allied Leather Forebay	Active	L	Rolfe Canal	3B & 4B	D8	Dam Breach, Severe Winter Weather, Flooding
051.46 Briar Hydro Penstock Intake	Active	L	Rolfe Canal	3B & 4B	D9	Dam Breach, Severe Winter Weather, Flooding, Human
051.62 Sheep Davis Rd. Dam	Active	L	NA	3B & 4B	D10	Dam Breach, Severe Winter Weather, Flooding
051.04 Briar Pipe Dam	Active	NM	Contoocook River Branch	3B & 4B	D11	Dam Breach
051.11 Cider Mill Dam	Active	NM	Mill Brook	3B & 4B	D12	Dam Breach
051.16 Snow Pond Dam	Active	NM	TR Hayward Brook	3B & 4B	D13	Dam Breach
051.17 Fisk Hill Pond	Active	NM	TR Turkey Pond	3B & 4B	D14	Dam Breach
051.18 Thayers Pond Dam	Active	NM	Bow Brook	3B & 4B	D15	Dam Breach
051.19 Quarry Dam	Active	NM	TR Quarry #2	3B & 4B	D16	Dam Breach
051.23 Farm Pond	Active	NM	Natural Swale (Farnum Hill)	3B & 4B	D17	Dam Breach
051.24 Hot Hole Outlet Brook Fish Screens	Active	NM	Hackett Brook	3B & 4B	D18	Dam Breach
051.26 Farm Pond	Active	NM	TR Contoocook River	3B & 4B	D19	Dam Breach
051.27 Recreation Pond	Active	NM	TR Turkey River	3B & 4B	D20	Dam Breach
051.29 Irrigation Pond	Active	NM	Natural Swale (Concord Country Club)	3B & 4B	D21	Dam Breach
051.30 Farm Pond Dam	Active	NM	Natural Swale (Lewis)	3B & 4B	D22	Dam Breach
051.31 Hayward Brook	Active	NM	Hayward Brook	3B & 4B	D23	Dam Breach
051.32 Fire Pond	Active	NM	Natural Swale (Hicks)	3B & 4B	D24	Dam Breach
051.34 Reflecting Pond	Active	NM	Woods Brook	3B & 4B	D25	Dam Breach
051.35 Farm Pond	Active	NM	TR Cemetery Brook	3B & 4B	D26	Dam Breach
051.36 Farm Pond	Active	NM	Natural Swale (Lewis)	3B & 4B	D27	Dam Breach
051.37 Farm Pond Dam	Active	NM	Natural Swale (Ekstrom)	3B & 4B	D28	Dam Breach
051.39 Detention Basin Dam	Active	NM	Runoff (Dejager)	3B & 4B	D29	Dam Breach

Table 4E, continued
Dams

Facility Name	Status	Class	Location	Maps (D key)	Map Index	Hazard the Site is Most Susceptible to
051.40 Recreation Pond	Active	NM	Natural Swale	3B & 4B	D30	Dam Breach
051.41 Woods Brook Dam	Active	NM	Woods Brook	3B & 4B	D31	Dam Breach
051.44 Sassan Dam	Active	NM	Natural Swale	3B & 4B	D32	Dam Breach
051.45 Canal Dike	Active	NM	Contoocook River Branch	3B & 4B	D33	Dam Breach
051.49 Detention Pond 2	Active	NM	Runoff (West Village)	3B & 4B	D34	Dam Breach
051.53 Lewis Farm Pond	Active	NM	Natural Swale	3B & 4B	D35	Dam Breach
051.56 Beaver Meadow Golf Course Pond	Active	NM	Beaver Meadow Brook	3B & 4B	D36	Dam Breach
051.57 Beaver Meadow Brook	Active	NM	Beaver Meadow Brook	3B & 4B	D37	Dam Breach
051.61 Health Care Dam	Active	NM	Runoff (Cap Region Health Care)	3B & 4B	D38	Dam Breach
051.63 Integra Drive Det Pond	Active	NM	Runoff	3B & 4B	D39	Dam Breach
051.64 Hitchcock Clinic Det Pond	Active	NM	Runoff	3B & 4B	D40	Dam Breach
051.65 Beaver Meadow Irrigation Pond	Active	NM	NA	3B & 4B	D41	Dam Breach
051.67 Shenandoah Estates	Active	NM	Ash Brook	3B & 4B	D42	Dam Breach
051.01 Sewalls Falls Dam	Breached	---	Merrimack River	3B & 4B	D43	Dam Breach
051.08 Allied Leather Auxiliary Dam	Breached	---	Contoocook River	3B & 4B	D44	Dam Breach
051.38 Smith Farm Pond	Breached	---	TR Rattlesnake Brook	3B & 4B	D45	Dam Breach
051.33 Fort Eddy Pond Dam	Exempt	---	TR Merrimack River	3B & 4B	D46	Dam Breach
051.48 Detention Pond 1	Exempt	---	Runoff (West Village Homeowners)	3B & 4B	D47	Dam Breach
051.50 Bluejay Detention Pond	Exempt	---	Runoff	3B & 4B	D48	Dam Breach
051.54 Pinecrest Detention Pond 1	Exempt	---	Runoff	3B & 4B	D49	Dam Breach
051.55 Pinecrest Detention Pond 2	Exempt	---	Runoff	3B & 4B	D50	Dam Breach
051.58 Fisherville Rd. Retail	Exempt	---	Runoff	3B & 4B	D51	Dam Breach
051.59 Mtn Green Detention Pond 1	Exempt	---	Runoff	3B & 4B	D52	Dam Breach
051.60 Mtn Green Detention Pond 2	Exempt	---	Runoff	3B & 4B	D53	Dam Breach
051.66 Health Care Det Pond	Exempt	---	Runoff	3B & 4B	D54	Dam Breach
051.68 Richmond Shopping Area Det Pond	Exempt	---	Runoff	3B & 4B	D55	Dam Breach
051.03 Rolfe Canal Dam	Ruins	---	Contoocook River Branch	3B & 4B	D56	Dam Breach
051.05 Merrimack River Power Co. Dam	Ruins	---	Contoocook River	3B & 4B	D57	Dam Breach

Table 4E, continued
Dams

Facility Name	Status	Class	Location	Maps (D key)	Map Index	Hazard the Site is Most Susceptible to
051.07 Cates Pond Dam	Ruins	---	Mill Brook	3B & 4B	D58	Dam Breach
051.09 Rolfe Factory Dam	Ruins	---	Contoocook River	3B & 4B	D59	Dam Breach
051.10 Spinning Mills Dam	Ruins	---	Contoocook River	3B & 4B	D60	Dam Breach
051.14 Rattlesnake Brook Dam	Ruins	---	Rattlesnake Brook	3B & 4B	D61	Dam Breach
051.15 Turtle Pond Brook Dam	Ruins	---	Mill Brook	3B & 4B	D62	Dam Breach
051.22 Unnamed Stream Dam	Ruins	---	Unnamed Stream	3B & 4B	D63	Dam Breach
051. 51 SES Detention Pond	Ruins	---	Runoff (Wheelabrator)	3B & 4B	D64	Dam Breach

Source: NH Department of Environmental Services GIS dams database 2009

Every dam is categorized into one of four classifications, which are differentiated by the degree of potential damage that a failure of the dam is expected to cause. The classifications are designated as High Hazard (H), Significant Hazard (S), Low Hazard (L), and Non-Menace (NM). Those without a classification are typically in ruins or are exempt from categorization.

Table 4F
Bridges

Facility Name	Location	Phone	Maps (B key)	Map Index	Hazard the Site is Most Susceptible to
040/090 (City)	US 3, Main St. over Contoocook River	228-2737	3B & 4B	B1	Flooding, Transportation Accident, Structural Collapse
045/085 (City)	Washington St. over Mill Outlet	228-2737	3B & 4B	B2	Flooding, Transportation Accident, Structural Collapse
048/082 (City)	Washington St. over Canal Inlet	228-2737	3B & 4B	B3	Flooding, Transportation Accident, Structural Collapse
053/071 (City)	Island Rd. over Canal Inlet	228-2737	3B & 4B	B4	Flooding, Transportation Accident, Structural Collapse
053/139 (City)	Hoit Road over Hayward Brook	228-2737	3B & 4B	B5	Flooding, Transportation Accident, Structural Collapse
069/052 (City)	Horse Hill Rd. over Contoocook River	228-2737	3B & 4B	B6	Flooding, Transportation Accident, Structural Collapse
070/117 (City)	Sewalls Falls Rd. over Merrimack River	228-2737	3B & 4B	B7	Flooding, Transportation Accident, Structural Collapse
130/019 (City)	Currier Rd. over Ash Brook	228-2737	3B & 4B	B8	Flooding, Transportation Accident, Structural Collapse
140/113 (City)	Commercial St. over Wattanummon Brook	228-2737	3B & 4B	B9	Flooding, Transportation Accident, Structural Collapse
142/113 (City)	Delta Dr. over Pedestrian Walkway	228-2737	3B & 4B	B10	Flooding, Transportation Accident, Structural Collapse
160/103 (City)	NH 9 (Bridge St.) over Storrs St., BMRR	228-2737	3B & 4B	B11	Flooding, Transportation Accident, Structural Collapse
163/056 (City)	Dunbarton Rd. over Turkey River	228-2737	3B & 4B	B12	Flooding, Transportation Accident, Structural Collapse
163/111 (City)	NH 9 (Loudon Rd) over Merrimack River	228-2737	3B & 4B	B13	Flooding, Transportation Accident, Structural Collapse
173/170 (City)	Langley Parkway Pedestrian Walkway	228-2737	3B & 4B	B14	Flooding, Transportation Accident, Structural Collapse
180/100 (City)	US 3, Water St. over BMRR	228-2737	3B & 4B	B15	Flooding, Transportation Accident, Structural Collapse
183/156 (City)	North Pembroke Rd. over Soucook River w/Pem	228-2737	3B & 4B	B16	Flooding, Transportation Accident, Structural Collapse
185/104 (City)	Manchester St. over Merrimack River	271-3667	3B & 4B	B17	Flooding, Transportation Accident, Structural Collapse
190/067 (City)	Iron Works Rd. over Turkey River	228-2737	3B & 4B	B18	Flooding, Transportation Accident, Structural Collapse
193/027 (City)	Birchdale Rd. over Bela Brook	228-2737	3B & 4B	B19	Flooding, Transportation Accident, Structural Collapse
200/015 (City)	Hooksett Turnpike over Bela Brook	228-2737	3B & 4B	B20	Flooding, Transportation Accident, Structural Collapse

Table 4F, continued
Bridges

Facility Name	Location	Phone	Maps (B key)	Map Index	Hazard the Site is Most Susceptible to
041/121 (State)	US 4 over NHRR	271-3667	3B & 4B	B21	Flooding, Transportation Accident, Structural Collapse
041/123 (State)	US 4 WB (Hoit Rd) over I-93, US 4 WB	271-3667	3B & 4B	B22	Flooding, Transportation Accident, Structural Collapse
042/121 (State)	US 4 EB (Ramp) over NHRR	271-3667	3B & 4B	B23	Flooding, Transportation Accident, Structural Collapse
059/127 (State)	NH132 over Hayward Brook	271-3667	3B & 4B	B24	Flooding, Transportation Accident, Structural Collapse
062/123 (State)	I-93, US 4 NB over Hayward Brook	271-3667	3B & 4B	B25	Flooding, Transportation Accident, Structural Collapse
066/121 (State)	I-93, US 4 SB over Hayward Brook	271-3667	3B & 4B	B26	Flooding, Transportation Accident, Structural Collapse
068/121 (State)	I-93, US 4 SB over Sewalls Falls Rd	271-3667	3B & 4B	B27	Flooding, Transportation Accident, Structural Collapse
068/122 (State)	I-93, US 4 NB over Sewalls Falls Rd	271-3667	3B & 4B	B28	Flooding, Transportation Accident, Structural Collapse
125/118 (State)	West Portsmouth St. over I-93, US 4	271-3667	3B & 4B	B29	Flooding, Transportation Accident, Structural Collapse, Human
136/116 (State)	I-93, US 4 SB over Merrimack River	271-3667	3B & 4B	B30	Flooding, Transportation Accident, Structural Collapse
136/117 (State)	I-93, US 4 NB over Merrimack River	271-3667	3B & 4B	B31	Flooding, Transportation Accident, Structural Collapse
139/116 (State)	I-93, US 4 over Wattanummon Brook	271-3667	3B & 4B	B32	Flooding, Transportation Accident, Structural Collapse
142/116 (State)	Delta Dr. over I-93, US 4	271-3667	3B & 4B	B33	Flooding, Transportation Accident, Structural Collapse
150/107 (State)	US 202 over NHRR, Continental Blvd.	271-3667	3B & 4B	B34	Flooding, Transportation Accident, Structural Collapse
152/104 (State)	US 202 over BMRR	271-3667	3B & 4B	B35	Flooding, Transportation Accident, Structural Collapse
152/107 (State)	I-93 SB On-Ramp over NHRR	271-3667	3B & 4B	B36	Flooding, Transportation Accident, Structural Collapse
152/108 (State)	I-393, US 4, US202 over I-93	271-3667	3B & 4B	B37	Flooding, Transportation Accident, Structural Collapse
152/115 (State)	I-393, US 4, US202 over Pedestrian Underpass	271-3667	3B & 4B	B38	Flooding, Transportation Accident, Structural Collapse
153/149 (State)	I-393, US 4, US202W over West Portsmouth St.	271-3667	3B & 4B	B39	Flooding, Transportation Accident, Structural Collapse
154/121 (State)	I-393, US 4, US202 over Fort Eddy Rd.	271-3667	3B & 4B	B40	Flooding, Transportation Accident, Structural Collapse

Table 4F, continued
Bridges

Facility Name	Location	Phone	Maps (B key)	Map Index	Hazard the Site is Most Susceptible to
154/123 (State)	I-393, US 4, US202 over Merrimack River	271-3667	3B & 4B	B41	Flooding, Transportation Accident, Structural Collapse
154/150 (State)	I-393, US 4, US202 E over West Portsmouth St.	271-3667	3B & 4B	B42	Flooding, Transportation Accident, Structural Collapse
156/138 (State)	NH 132 (Eastside Dr.) over I393, US 4, US 202	271-3667	3B & 4B	B43	Flooding, Transportation Accident, Structural Collapse
160/188 (State)	NH 9 over Soucook River	271-3667	3B & 4B	B44	Flooding, Transportation Accident, Structural Collapse
161/184 (State)	I-393, US 4, US 202W over Soucook River w/Pem	271-3667	3B & 4B	B45	Flooding, Transportation Accident, Structural Collapse
162/184 (State)	I-393, US 4, US 202E over Soucook River w/Pem	271-3667	3B & 4B	B46	Flooding, Transportation Accident, Structural Collapse
163/024 (State)	I-89 EB over Stickney Hill Rd.	271-3667	3B & 4B	B47	Flooding, Transportation Accident, Structural Collapse
163/106 (State)	I-93, FEE TPK over NH 9 (Loudon, Rd)	271-3667	3B & 4B	B48	Flooding, Transportation Accident, Structural Collapse
164/024 (State)	I-89 over Stickney Hill Rd.	271-3667	3B & 4B	B49	Flooding, Transportation Accident, Structural Collapse
164/167 (State)	NH 106 over I-393, US 4, US 202	271-3667	3B & 4B	B50	Flooding, Transportation Accident, Structural Collapse
165/029 (State)	I-89 EB over Turkey Pond	271-3667	3B & 4B	B51	Flooding, Transportation Accident, Structural Collapse
165/177 (State)	NH 9 over I-393, US 4, US 202	271-3667	3B & 4B	B52	Flooding, Transportation Accident, Structural Collapse
166/029 (State)	I-89 WB over Turkey Pond	271-3667	3B & 4B	B53	Flooding, Transportation Accident, Structural Collapse
167/029 (State)	Recreation Trail over Turkey Pond	271-3667	3B & 4B	B54	Flooding, Transportation Accident, Structural Collapse
167/042 (State)	I-89 over Turkey Pond Rd.	271-3667	3B & 4B	B55	Flooding, Transportation Accident, Structural Collapse
175/051 (State)	I-89 EB over Silk Farm Rd.	271-3667	3B & 4B	B56	Flooding, Transportation Accident, Structural Collapse
176/051 (State)	I-89 WB over Silk Farm Rd.	271-3667	3B & 4B	B57	Flooding, Transportation Accident, Structural Collapse
180/063 (State)	NH 13 over Turkey River	271-3667	3B & 4B	B58	Flooding, Transportation Accident, Structural Collapse
181/055 (State)	I-89 EB over NH 13	271-3667	3B & 4B	B59	Flooding, Transportation Accident, Structural Collapse
182/055 (State)	I-89 WB over NH 13	271-3667	3B & 4B	B60	Flooding, Transportation Accident, Structural Collapse

Table 4F, continued
Bridges

Facility Name	Location	Phone	Maps (B key)	Map Index	Hazard the Site is Most Susceptible to
184/103 (State)	I-93, FEE TPK over US 3, Manchester St.	271-3667	3B & 4B	B61	Flooding, Transportation Accident, Structural Collapse
187/036 (State)	NH 13 over Turee Brook	271-3667	3B & 4B	B62	Flooding, Transportation Accident, Structural Collapse, Human
188/029 (State)	NH 13 over Bela Brook	271-3667	3B & 4B	B63	Flooding, Transportation Accident, Structural Collapse
198/146 (State)	NH 106 over Soucook River w/Pem	271-3667	3B & 4B	B64	Flooding, Transportation Accident, Structural Collapse
201/096 (State)	FEE TPK, I-93 SB over Hall St.	271-3667	3B & 4B	B65	Flooding, Transportation Accident, Structural Collapse
201/097 (State)	FEE TPK, I-93 NB over Hall St.	271-3667	3B & 4B	B66	Flooding, Transportation Accident, Structural Collapse
203/087 (State)	NH 3A over I-93, FEE TPK	271-3667	3B & 4B	B67	Flooding, Transportation Accident, Structural Collapse
203/089 (State)	I-93, FEE TPK SB over BMRR	271-3667	3B & 4B	B68	Flooding, Transportation Accident, Structural Collapse
203/090 (State)	I-93, FEE TPK SB over BMRR	271-3667	3B & 4B	B69	Flooding, Transportation Accident, Structural Collapse
215/124 (State)	US 3 over Soucook River	271-3667	3B & 4B	B70	Flooding, Transportation Accident, Structural Collapse

Source: NH Department of Transportation State Bridge List 2009

Table 4G
Medical Facilities

Facility Name	Address	Phone	Maps (M key)	Map Index	Hazard the Site is Most Susceptible to
Concentra Medical Center	1 Pillsbury St.	223-2300	3A & 4A	M1	Utility Failure
Concord Family Medicine	18 Foundry St.	228-0071	3A & 4A	M2	Utility Failure
Concord Feminist Health Center	38 S. Main St.	225-2739	3A & 4A	M3	Arson, Terrorism, Hostage Situation
Concord Hospital	250 Pleasant St.	225-2711	3A & 4A	M4	Utility Failure
Concord Hospital at Horseshoe Pond	60 Commercial St.	230-1200	3A & 4A	M5	Utility Failure
Concord OB-GYN	189 N. Main St.	228-1111	3A & 4A	M6	Utility Failure
Concord Orthopedics	264 Pleasant St.	224-3368	3A & 4A	M7	Utility Failure
Concord Otolaryngology	194 Pleasant St.	224-2353	3A & 4A	M8	Utility Failure
Dartmouth-Hitchcock Clinic	253 Pleasant St.	226-2200	3A & 4A	M9	Utility Failure
Eye Center of Concord	2 Pillsbury St.	228-1104	3A & 4A	M10	Utility Failure
Family Tree Health Care	81 Hall St.	228-7245	3A & 4A	M11	Utility Failure
HealthSouth Rehabilitation Hospital	254 Pleasant St.	226-9800	3A & 4A	M12	Utility Failure, Biological
Memorial Medical Office Building	246 Pleasant St.	225-2711	3A & 4A	M13	Utility Failure
New Hampshire Hospital	36 Clinton St.	271-5300	3A & 4A	M14	Utility Failure
Penacook Family Physicians	1 Merrimack St.	753-4302	3A & 4A	M15	Utility Failure
Pillsbury Medical Office	248 Pleasant St.	225-2711	3A & 4A	M16	Utility Failure
Pleasant Street Family Medicine	280 Pleasant St.	226-3400	3A & 4A	M17	Utility Failure
St. Pauls Infirmary	325 Pleasant St.	229-4600	3A & 4A	M18	Utility Failure

Sources: Fire Department, Hazard Mitigation Plan Update Task Force 2011

VULNERABLE POPULATIONS

Areas or neighborhoods that are densely populated, buildings that house people who may not be self-sufficient in a disaster, or areas that include homes which are not very resistant to natural disasters are considered vulnerable. Vulnerable populations include manufactured home parks (MHP), elderly housing developments or care facilities, and day care centers.

Table 5
Schools

Facility Name	Address	Phone	Maps (S key)	Map Index	Hazard the Site is Most Susceptible to
Beaver Meadow School	40 Sewalls Falls Rd.	225-0853	3C & 4C 3E & 4E	S1	Power Utility Failure,
Bishop Brady High School	25 Columbus Ave	224-7418	3C & 4C 3E & 4E	S2	Power Utility Failure,
Broken Ground School	23 Portsmouth St.	225-0855	3C & 4C 3E & 4E	S3	Power Utility Failure,
College for Lifelong Learning	125 North State St.	228-3000	3C & 4C 3E & 4E	S4	Power Utility Failure,
Conant School	152 South St.	225-0827	3C & 4C 3E & 4E	S5	Power Utility Failure,
Concord High School	170 Warren St.	225-0800	3C & 4C 3E & 4E	S6	Power Utility Failure,
Dame School	14 Canterbury Rd.	225-0830	3C & 4C 3E & 4E	S7	Power Utility Failure,
Eastman School - Closed 6/11	15 Shawmut St.	225-0858	3C & 4C 3E & 4E	S8	Power Utility Failure,
Hesser College	16 Foundry St. (formerly 25 Hall Street)	225-9200	3C & 4C 3E & 4E	S9	Power Utility Failure,
Merrimack Valley High School	106 Village St	753-4311	3C & 4C 3E & 4E	S10	Power Utility Failure,
Merrimack Valley Middle School	14 Allen St.	753-6336	3C & 4C 3E & 4E	S11	Power Utility Failure,
NH Fire Academy	222 Sheep Davis Road	271-2661	3C & 4C 3E & 4E	S12	Power Utility Failure,
NH Police Academy	17 Fan Road	271-2133	3C & 4C 3E & 4E	S13	Power Utility Failure,
New Hampshire Technical Institute	31 College Dr.	271-6484	3C & 4C 3E & 4E	S14	Power Utility Failure,
Penacook Elementary	60 Village St.	753-4891	3C & 4C 3E & 4E	S15	Power Utility Failure,
Rumford School	40 Thorndike St.	225-0836	3C & 4C 3E & 4E	S16	Power Utility Failure,
Rundlett Junior High School	144 Conant Dr.	225-0862	3C & 4C 3E & 4E	S17	Power Utility Failure,
Second Start	17 Knight St.	224-5947	3C & 4C 3E & 4E	S18	Power Utility Failure
Shaker Road Private School (K-8)	131 Shaker Road	224-0161	3C & 4C 3E & 4E	S19	Power Utility Failure,
St. Paul's School	325 Pleasant St.	229-4600	3C & 4C 3E & 4E	S20	Power Utility Failure,
Trinity Baptist Church Private School K-12	80 Clinton St.	225-3999	3C & 4C 3E & 4E	S21	Power Utility Failure,
University of New Hampshire Law Center	2 White St.	228-1541	3C & 4C 3E & 4E	S22	Severe Winter, Power Utility Failure,
Walker School	4 Church St.	225-0844	3C & 4C 3E & 4E	S23	Power Utility Failure

Sources: Fire Department, Hazard Mitigation Plan Update Task Force 2011

Plymouth State College at 2 Pillsbury Street is another college in the City, using a remote facility to serve 6-8 classrooms. Concord Christian Academy is located on Regional Drive.

Table 5A
Multi-Unit Housing

Facility Name	Address	Phone	Maps (L key)	Map Index	Hazard the Site is Most Susceptible to
Alton Woods	241 Loudon Rd.	224-4701 / 224-9221	3C & 4C	L1	Fire
Beaver Meadow Village	5 Waumbec Rd.	224-5321	3C & 4C	L2	Fire
Boucher Apartments	Center Street (Penacook)	224-4059	3C & 4C	L3	Fire
Briar Pipe Apartments	83 Washington St. (Penacook)	753-1046	3C & 4C	A3	Fire
Brickstone Commons/Morningstar	177 Loudon Rd.	224-7368	3C & 4C	L4	Fire, Human
Canterbury Meadows Townhouse	11 Northeast Village Rd.	224-7441	3C & 4C	L5	Fire
Capitol Plaza/Crutchfield Apartments	15 Pitman St.	225-1167	3C & 4C	A4	Fire
Centerstone Residence	10 Pine Acres Rd.	N/A	3C & 4C	L6	Fire
Concord Commons Condominiums	129 Fisherville Rd.	223-9600	3C & 4C	L7	Fire
Concord Gardens/Royal Gardens	15 Concord Gardens	224-9732	3C & 4C	L8	Fire, Human
Concord Green Condominiums	128 Loudon Rd.	225-8014	3C & 4C	L9	Fire
Concord Housing Authority Office	10 Ferry Street	225-1167	3C & 4C	A6	Fire
Concord Park North	81 Fisherville Rd.	226-2747	3C & 4C	L10	Fire, Human
Concord Village Apartments	201 Loudon Road	224-9221	3C & 4C	L11	Fire
Cranmore Ridge	169 Portsmouth Street	228-2151	3C & 4C	L12	Fire
Granite Ledges of Concord	151 Langley Parkway	224-0777	3C & 4C	I1	Fire
Eagles Bluff	1 Canton Circle	225-4702	3C & 4C	L13	Fire, Human
East Side Village/Eastern Apartments	30 East Side Drive	224-9221	3C & 4C	L14	Fire
Edgewood Heights	58 Branch Turnpike Rd.	224-4771	3C & 4C	L15	Fire
Family Village 1	Matthew St.	N/A	3C & 4C	L16	Fire
Family Village 2	McKinley St.	N/A	3C & 4C	L17	Fire
Fire House Block Apartments	46 Warren St.	N/A	3C & 4C	A11	Fire
Fisherville Road Apartments/Penacook Place	Heartwood Lane	866-668-1467	3C & 4C	L18	Fire, Human
Florence V. Hodges Apartments	205 Loudon Rd.	224-5252	3C & 4C	A14	Fire
Franklin Square	15 Wyman St	620-9546	3C & 4C	L19	Fire
Friedman Court	19 Old Suncook Rd.	223-0810	3C & 4C	L20	Fire
Havenwood Heritage Heights	33 Christian Ave	224-5363	3C & 4C	I3	Fire
Hillside View Apartments	243 Pleasant St.	225-6310	3C & 4C	L21	Fire
Hollis Commons Apartments	Cherry St.	N/A	3C & 4C	L22	Fire
Horseshoe Pond Place	26 Commercial St.	230-1200	3C & 4C	I5	Fire

Table 5A, continued
Multi-Unit Housing

Facility Name	Address	Phone	Maps (L key)	Map Index	Hazard the Site is Most Susceptible to
Hospice at Concord Hospital	250 Pleasant St.	224-2273	3C & 4C	I6	Fire
Island Shores Condominiums	51 Franconia Rd.	753-6026	3C & 4C	L23	Fire
John H Whitaker Assisted Living Care	30 Borough Rd.	753-9100	3C & 4C	I6	Fire
Kennedy Apartments	1 Thompson St.	224-4059	3C & 4C	L24	Fire, Human
Loft Apartments	4 Garvins Falls Rd.	N/A	3C & 4C	L25	Fire, Human
Mast Yard	37 Alice Drive	N/A	3C & 4C	L26	Fire, Human
McKenna's Purchase Condominiums	Branch Turnpike Rd.	N/A	3C & 4C	L27	Fire
Meadow Brook Apartments	Fisherville Rd.	228-3311	3C & 4C	L28	Fire
Mulberry Village Condos	Marion St.	N/A	3C & 4C	L29	Fire
Neighboring Pines	Fisherville Rd.	N/A	3C & 4C	L30	Fire
Oak Bridge Condominiums	120 Fisherville Rd.	225-2450	3C & 4C	L31	Fire, Human
Oak Creek	Maplewood Lane	753-4257	3C & 4C	L32	Fire
Park View Apartments	128 Loudon Rd.	429-2019	3C & 4C	L33	Fire, Human
Parmenter Place	15 Parmenter Rd.	223-0810	3C & 4C	L34	Fire
Pembroke Place Apartments	83-87 Manchester St.	N/A	3C & 4C	L35	Fire
Penacook Place Apartments/ Fisherville Road Apartments	29 Pinehurst St.	866-668-1467	3C & 4C	L36	Fire
Penwood Apartments	14 Penwood Drive	753-4318	3C & 4C	L37	Fire
Perley Place	56 Perley Street	224-9221	3C & 4C	L38	Fire
Pinewood Village Apartments	Bog Rd.	N/A	3C & 4C	L39	Fire
Pleasant View Retirement Home	227 Pleasant St.	225-3970	3C & 4C	I8	Fire
Prescott/Winthrop Place Apartments	27 Prescott St.	226-2424	3C & 4C	L40	Fire
Regency Hill Estates	12 East Side Dr.	228-2151	3C & 4C	L41	Fire, Human
Riverhill Condos	Bog Rd.	N/A	3C & 4C	L42	Fire
Salisbury Green Apartments	201 Loudon Rd.	224-9130	3C & 4C	L43	Fire
South Concord Meadows	99 Clinton St.	224-2268	3C & 4C	L44	Fire
The Birches	300 Pleasant St.	224-9111	3C & 4C	I10	Fire
The Pines Apartments	20 Bog Rd.	228-3311	3C & 4C	L45	Fire
Village At Thirty Pines	11 Borough Rd.	369-0800	3C & 4C	L46	Fire
William Haller Apartments	Jennings Drive	224-4059	3C & 4C	L47	Fire, Human

Table 5A, continued
Multi-Unit Housing

Facility Name	Address	Phone	Maps (L key)	Map Index	Hazard the Site is Most Susceptible to
Willow Crossing	Knolls Village Road	224-9221	3C & 4C	L48	Fire
Windsor Estates	40 Alice Dr.	224-5888	3C & 4C	L49	Fire

*Sources: Human Services Department website; Fire Department,
Hazard Mitigation Plan Update Task Force 2011*

The Mennino CATCH project on 51 Storrs Street is a multi-unit (45 units) housing development completed in September 2011.

See also **Table 5C** Congregate Care Facilities (*Map Index I*), and **Table 5E**, Public Assistance Facilities (*Map Index A*) as there is some overlap in housing types.

Table 5B
Manufactured Housing Parks

Facility Name	Address	Phone	Maps (P key)	Map Index	Hazard the Site is Most Susceptible to
Alosa's Mobile Homes	69 Manchester Street 190 Manchester Street 192 Manchester Street (3 parks)	228-8481	3C & 4C	P1	Fire, Wind
Concord Terrace	73 Fisherville Rd.	225-3091	3C & 4C	P2	Fire, Wind
Crestwood Estates/Jensen's Inc	14 Crestwood Drive 59 Manchester St.	224-4464	3C & 4C	P3	Fire, Wind
Fisherville Co-op	107 Fisherville Rd.		3C & 4C	P4	Fire, Wind
Foxcroft Estates	4 Alice Dr. 121 Fisherville Rd. (park)	225-7415	3C & 4C	P5	Fire, Wind
Green Acres Mobile Homes/Valley Stream Estates	Fort Eddy Road (park) 4 McKee Dr. (office)	224-7971	3C & 4C	P6	Fire, Wind, Flood
Green Meadows Manufactured Home Park	24 Boanza Dr. 51 Fisherville Rd. (park)	225-0073	3C & 4C	P7	Fire, Wind
Princess Mobile Homes	43 Fisherville Rd.		3C & 4C	P8	Fire, Wind
Riverview Landing	Hall St.		3C & 4C	P9	Fire, Wind, Flood

Sources: Fire Department, Hazard Mitigation Plan Update Task Force 2011

Table 5C
Congregate Care Facilities

Facility Name	Address	Phone	Maps (I Key)	Map Index	Hazard the Site is Most Susceptible to
Granite Ledges of Concord	151 Langley Pkwy	224-0777	3C & 4C	I1	Utility Failure, Biological
Harris Hill Nursing Home	20 Maitland St.	224-1319	3C & 4C	I2	Utility Failure, Biological
Havenwood-Heritage Heights	33 Christian Ave.	800-457-6833	3C & 4C	I3	Utility Failure, Biological
Heritage Heights	149 East Side Dr.	225-6999	3C & 4C	I4	Utility Failure, Biological
Horseshoe Pond Place	26-28 Commercial St.	641-2163	3C & 4C	I5	Utility Failure, Biological
Hospice Care at Concord Hospital	250 Pleasant Street	225-2711	3C & 4C	I6	Utility Failure, Biological
John H. Whitaker Assisted Care	30 Borough Rd.	753-9100	3C & 4C	I7	Utility Failure, Biological
McKerley Nursing Home	239 Pleasant St.	224-6561	3C & 4C	I8	Utility Failure, Biological
Pleasant View Retirement Community	227 Pleasant St.	225-3970	3C & 4C	I9	Utility Failure, Biological
Presidential Oaks	200 Pleasant St.	225-6644	3C & 4C	I10	Utility Failure, Biological
The Birches at Concord	300 Pleasant St.	224-9111	3C & 4C	I11	Utility Failure, Biological
TLC Medical Daycare for Adults	211 Loudon Rd.	224-8171	3C & 4C	I12	Utility Failure, Biological

Sources: Fire Department, Hazard Mitigation Plan Update Task Force 2011

Table 5D
Child Care Facilities

Facility Name	Address	Phone	Maps (K key)	Map Index	Hazard the Site is Most Susceptible to
After School Program - Conant	152 South St.	225-4862	3C & 4C	S5	Terrorism, Hostage Situation
After School Program - Kimball @ Rumford	40 Thorndike St.	225-0836	3C & 4C	S19	Terrorism, Hostage Situation
After School Program - Beaver Meadow	40 Sewalls Falls Rd.	225-4862	3C & 4C	S1	Terrorism, Hostage Situation
Child and Family Services Group Home	238-240 N Main St.	518-4005	3C & 4C	K1	Utility Failure, Terrorism, Hostage Situation
Concord Boys and Girls Club	55 Bradley St.	224-1061	3C & 4C	K2	Terrorism, Hostage Situation
Concord Cooperative Playschool	41 West St.	228-8706	3C & 4C	K3	Terrorism, Hostage Situation
Concord Family YMCA ASP @ Penacook	Fisherville Rd.	783-1138	3C & 4C	S15	Terrorism, Hostage Situation
Concord Family YMCA Child Center	44 Warren St.	228-9622	3C & 4C	K4	Terrorism, Hostage Situation
Concord Head Start	67 Old Loudon Rd.	224-6492	3C & 4C	K5	Terrorism, Hostage Situation
Concord High School Child Care Center	170 Warren Street (school)	225-0809	3C & 4C	S6	Terrorism, Hostage Situation
Discovery Village Early Learning Center	214 N. Main St.	717-0291	3C & 4C	K6	Terrorism, Hostage Situation
East Concord Cooperative Playschool	18 Eastman St.	225-9745	3C & 4C	K7	Terrorism, Hostage Situation
East Side Learning Center	164 East Side Dr.	224-2717	3C & 4C	K8	Terrorism, Hostage Situation
Emerson School for Preschoolers	274 Pleasant St.	224-8212	3C & 4C	K9	Terrorism, Hostage Situation
First Start	17 Knight St.	228-1341	3C & 4C	K10	Terrorism, Hostage Situation
Girls Inc. of NH @ Concord	37 Green St.	223-0087	3C & 4C	K11	Terrorism, Hostage Situation
Head 2 Toe Learning Center	3 Garrison St.	224-4142	3C & 4C	K12	Terrorism, Hostage Situation
Immaculate Heart of Mary Children's Center	180 Loudon Rd.	226-3458	3C & 4C	K13	Terrorism, Hostage Situation
Little Saints Christian School	211/213 North Main St.	229-0371	3C & 4C	K14	Terrorism, Hostage Situation
Merrimack Valley Day Care	19 North Fruit St.	224-1632	3C & 4C	K15	Terrorism, Hostage Situation
Merrimack Valley DC @ Eagles Bluff	2 Canton Circle	225-4305	3C & 4C	K16	Terrorism, Hostage Situation
Merrimack Valley DC @ Jennings Dr.	19 Jennings Dr.	224-1632	3C & 4C	K17	Terrorism, Hostage Situation
Merrimack Valley DC @ NH Hospital	105 Pleasant St.	271-5735	3C & 4C	K18	Terrorism, Hostage Situation
Montessori Children's Center	131 Hoit Rd.	224-8088	3C & 4C	K19	Terrorism, Hostage Situation
NH Odd Fellows Home Children's Center	200 Pleasant St.	225-6644	3C & 4C	K20	Terrorism, Hostage Situation
NHTI Child & Family Development Center	21 College Dr.	271-8911	3C & 4C	K21	Terrorism, Hostage Situation
Penacook Community Center	76 Community Dr.	753-9700	3C & 4C	K22	Terrorism, Hostage Situation
Racquet Club of Concord After School	10 Garvins Falls Rd.	224-7787	3C & 4C	K23	Terrorism, Hostage Situation
Shaker Road Child Care Center	95 Shaker Road	224-0161	3C & 4C	K24	Terrorism, Hostage Situation

Table 5D, continued
Child Care Facilities

Facility Name (continued)	Address	Phone	Maps (K key)	Map Index	Hazard the Site is Most Susceptible to
Step Ahead Learning Center	79 Clinton St.	228-4466	3C & 4C	K25	Terrorism, Hostage Situation
Sweet Dreams Day Care	5 Susan Ln.	225-0392	3C & 4C	K26	Terrorism, Hostage Situation
The Children's Learning Center @ SPS	325 Pleasant St.	229-5576	3C & 4C	K27	Terrorism, Hostage Situation
The Children's Place	27 Burns Ave.	224-9920	3C & 4C	K28	Terrorism, Hostage Situation
The Early Enrichment Center	16 Chenell Dr.	224-3282	3C & 4C	K29	Terrorism, Hostage Situation
The Learning Center @ Concord Hospital	139 Langley Parkway	224-0590	3C & 4C	K30	Terrorism, Hostage Situation
Tiny Tots Funspot	107 Fisherville Rd.	224-2147	3C & 4C	K31	Terrorism, Hostage Situation
Weezy's House (Roberge Daycare)	95 Broadway Apt. #1	225-2313	3C & 4C	K32	Terrorism, Hostage Situation
Woodside School	114 South Fruit St.	224-8418	3C & 4C	K33	Terrorism, Hostage Situation

Sources: NH Child Care Association, 2004; Merrimack County Resource and Referral, 2004; Fire Department; Hazard Mitigation Plan Update Task Force 2011

In addition, St. Pauls School has a child care facility onsite.

Table 5E
Public Assistance Facilities

Facility Name	Address	Phone	Maps (A key)	Map Index	Hazard the Site is Most Susceptible to
Alcohol and Drug Intervention of Concord	48 Branch Turnpike	228-1959	3C & 4C	A1	Power/Utility Failure
American Red Cross	2 Maitland Street	225-6697	3C & 4C	A2	Power/Utility Failure
Briar Pipe Apartments	83 Washington St.	753-1046	3C & 4C	A3	Power/Utility Failure, Flooding
Capitol Plaza Apartments	15 Pitman St.	224-4059	3C & 4C	A4	Power/Utility Failure
Colonial Arms Rooming House	56 South Main Street	228-8612	3C & 4C	A5	Power/Utility Failure
Concord Housing Authority	15 Pitman Street	224-4059	3C & 4C	A6	Power/Utility Failure
Eastern Apartments	30 Eastside Dr/Eastern Ave	224-9221	3C & 4C	A7	Power/Utility Failure
Endicott Hotel*	3 South Main Street	224-9221	3C & 4C	A8	Power/Utility Failure
Families in Transition	5 Market Lane	225-6318	3C & 4C	A9	Power/Utility Failure
Families in Transition	9 Odd Fellows Avenue	225-6318	3C & 4C	A10	Power/Utility Failure
Firehouse Block Apartments	46 Warren St.	225-7247	3C & 4C	A11	Power Utility Failure
First Baptist Church Food Pantry	20 North State Street	224-7427	3C & 4C	A12	Power/Utility Failure
First Congregational Church Food Pantry and Cold Weather Shelter	177 North Main Street	225-5491	3C & 4C	A13	Power/Utility Failure
Florence V. Hodges Apartments	205 Loudon Rd.	224-9221	3C & 4C	A14	Power/Utility Failure
Friendly Soup Kitchen (closed)	14 Montgomery Street (closed) temp location at Holy Trinity Green Orth 68 N State St	224-7678	3C & 4C	A15	Power/Utility Failure
Friends Emergency Housing	30 Thompson Street	228-1462	3C & 4C	A16	Power/Utility Failure
Immaculate Conception Church Food Pantry	9 Bonney Street	753-4413	3C & 4C	A17	Power/Utility Failure
Jobin Rooming House	46 South Street	226-0937	3C & 4C	A18	Power/Utility Failure
McKenna House Shelter/Group Home	100 Fruit Street	228-3505	3C & 4C	A19	Power/Utility Failure
Oakstream Rooming House - South Street	32 & 38 South Street	244-7449	3C & 4C	A20	Power/Utility Failure
Oakstream Rooming House - Warren Street	56 & 58 Warren Street	244-7449	3C & 4C	A21	Power/Utility Failure
Rape and Domestic Violence Shelter	Not published	225-7376	Not on map	N/A	Power/Utility Failure
Rolfe & Rumford Home (closed)	23 Rundlett Street	225-5901	3C & 4C	A22	Power/Utility Failure
Rollins Street Rooms	5 Rollins Street	225-0464	3C & 4C	A23	Power/Utility Failure
Salvation Army	58 Clinton Street	225-5586	3C & 4C	A24	Power/Utility Failure
St. John's Church Food Pantry	72 South Main Street	225-1122	3C & 4C	A25	Power/Utility Failure
St. Paul's Church Food Pantry	21 Centre Street	224-2523	3C & 4C	A26	Power/Utility Failure

Table 5E, continued
Public Assistance Facilities

Facility Name	Address	Phone	Maps (A key)	Map Index	Hazard the Site is Most Susceptible to
St. Peter's Church Food Pantry	135 North Main Street	225-4331	3C & 4C	A27	Power/Utility Failure
Stearns Rooming House	32 North Spring Street	225-6549	3C & 4C	A28	Power/Utility Failure
Whitfield House	86 Pleasant St.	228-8792	3C & 4C	A29	Power/Utility Failure

*Sources: Human Services Department website; Fire Department;
Hazard Mitigation Plan Update Task Force 2011*

**Endicott Hotel is planned to be renovated into market rate housing in 2012*

There is a methadone clinic located at 6 Loudon Road.

ECONOMIC ASSETS

Although the City contains around 1,500 businesses and organizations, those that employ over 50 people are of a greater concern. These businesses employ the most people in a City (both from Concord and from outside), and are places where large numbers of people are located and may need to evacuate from in the event of a disaster. In other cases, some large businesses can provide critical services or products to residents in need or may be able to sustain their employees for a duration of time.

Table 6
Economic Assets

Facility Name	Address	Phone	Maps (E key)	Map Index	Hazard the Site is Most Susceptible to
Airport Road Industrial Park Area	Airport Road	N/A	3D & 4D	E1	Structure Collapse, Economic Depression
Banks Chevrolet-Cadillac-Oldsmobile Inc	137 Manchester St.	224-4055	3D & 4D	E2	Economic Depression, Strike
Beede Electric	88 Village Street	753-6362	3D & 4D	E3	Economic depression,
Capitol Shopping Center Area	80 Storrs Street	N/A	3D & 4D	E4	Economic Depression,
College for Lifelong Learning	125 North State St.	228-3000	3D & 4D	E5	Power/Utility Outage
Concord Center	10 Ferry Street	225-5760	3D & 4D	E6	Economic Depression, Power/Utility Outage
Concord Hospital Complex Area	250 Pleasant Street	225-2711	3D & 4D	E7	Strike, Terrorism
Concord Litho Group	92 Old Turnpike Rd	225-3328	3D & 4D	E8	Strike, Economic Depression
Concord Monitor	1 Sewalls Falls Dr.	224-5301	3D & 4D	E9	Flooding, Economic Depression
Concord Sports Center	Hoit Rd.	N/A	3D & 4D	E10	Economic Depression
D'Amante Drive Area	D'Amante Drive	N/A	3D & 4D	E11	Economic Depression,
Exit 17 Industrial Area	Hoit Road / Whitney Road	N/A	3D & 4D	E12	Economic Depression
Fort Eddy Road Area	Fort Eddy Road	N/A	3D & 4D	E13	Economic Depression
Gateway Area	Sheep Davis Rd.	N/A	3D & 4D	E14	Economic Depression
Hood Plant	330 N State St	225-3379	3D & 4D	E15	Hazardous Material, Strike
Horseshoe Pond Development Area	Commercial Street	N/A	3D & 4D	E16	Economic Depression
Hoyt Electric	23 Meter Street	753-6321	3D & 4D	E17	Economic Depression
King's Plaza (formerly) Area	12 Loudon Road	N/A	3D & 4D	E18	Economic Depression
Les Marden's Park	Hall St.	N/A	3D & 4D	E19	Economic Depression
Lincoln Financial	1 Granite Place	226-5000	3D & 4D	E20	Financial System Collapse, Strike
Locke Road/Exit 16 Park Area	Locke Road	N/A	3D & 4D	E21	Economic Depression
Loudon Road Restaurant Area	Loudon Road	N/A	3D & 4D	E22	Economic Depression
Manchester Street Area	Manchester Street	N/A	3D & 4D	E23	Economic Depression

Table 6, continued
Economic Assets

Facility Name	Address	Phone	Maps (E key)	Map Index	Hazard the Site is Most Susceptible to
NH State Office Park East Area	Hazen Dr.	N/A	3D & 4D	E24	Terrorism
NH State Office Park South Area	Pleasant St.	271-5555	3D & 4D	E25	Terrorism
NH Technical Institute	31 College Dr.	271-6484	3D & 4D	E26	Terrorism
Opportunity Corridor (Downtown)	Main Street	N/A	3D & 4D	E27	Economic Depression
Sam's Club	304 Sheep Davis Rd.	226-1255	3D & 4D	E28	Economic Depression
St. Paul's School	Dunbarton Rd.	N/A	3D & 4D	E29	Economic Depression, Flooding
Terrill Park Drive Area	Old Turnpike Rd.	N/A	3D & 4D	E30	Economic Depression
The Concord Group Insurance Companies	4 Bouton St.	224-4086	3D & 4D	E31	Financial Issues
Thirty Pines	Fisherville Rd.	N/A	3D & 4D	E32	Economic Depression
University of NH Law Center	2 White St.	228-1541	3D & 4D	E33	Hostage Situation, Financial Issues
Wal-Mart	344 Loudon Rd.	226-9312	3D & 4D	E34	Terrorism, Economic Depression
Wheelabrator	11 Whitney Rd.	753-8411	3D & 4D	E35	Fire/Explosion, Hazardous Materials

*Sources: Tower Employment Data, 2003; Fire Department;
Hazard Mitigation Plan Update Task Force 2011*

SPECIAL CONSIDERATIONS

Churches and cemeteries are special considerations for their unique contributions to society. Churches are often natural gathering places for people in disasters and can temporarily provide shelter and accommodation. Cemeteries, both public and small privately owned lots, are recognized for their historical and logistical importance. In addition, businesses that potentially store or use hazardous materials are listed as special considerations due to the potential for leaking or combustion in the event of a disaster.

Table 7
Churches

Facility Name	Address	Phone	Maps (W key)	Map Index	Hazard the Site is Most Susceptible to
Blazing Star Eureka Lodge	53 Iron Works Rd	224-7882	3E & 4E	W1	Utility Failure, Arson
Carmelite Monastery	275 Pleasant St.	225-5791	3E & 4E	W2	Utility Failure, Arson
Centerpoint Church	20 N State St.	224-7427	3E & 4E	W3	Utility Failure, Arson
Child Evangelism Fellowship	11 Brookwood Dr.	369-4566	3E & 4E	W4	Utility Failure, Arson
Church of Christ	141 Fisherville Rd	224-0370	3E & 4E	W5	Utility Failure, Arson
Church of Jesus Christ of Latter Day Saints	91 Clinton St.	224-3061	3E & 4E	W6	Utility Failure, Arson
Concord Bible Fellowship	25 Rockingham St.	225-8888	3E & 4E	W7	Utility Failure, Arson
Concordia Lutheran Church	211 N Main St.	224-0277	3E & 4E	W8	Utility Failure, Arson
Destiny Christian Church	339 Mountain Rd.	225-8442	3E & 4E	W9	Utility Failure, Arson
Dormition of the Theotokos Orthodox	4 Union St.	225-4909	3E & 4E	W10	Utility Failure, Arson
East Congregational Church	51 Mountain Rd	224-9242	3E & 4E	W11	Utility Failure, Arson
Episcopal Diocesan House	63 Green St.	224-1914	3E & 4E	W12	Utility Failure, Arson
Faith Tabernacle Church	164 East Side Dr.	224-1820	3E & 4E	W13	Utility Failure, Arson
First Church of Christ Scientist	33 School St.	224-0818	3E & 4E	W14	Utility Failure, Arson
First Congregational Church	177 N Main St.	225-5491	3E & 4E	W15	Utility Failure, Arson
Gospel Light of God	124 Hall St.	225-7373	3E & 4E	W16	Utility Failure, Arson
Grace Episcopal Church	30 Eastman St.	224-2252	3E & 4E	W17	Utility Failure, Arson
Grace Evangelical Church	Summer St.	N/A	3E & 4E	W18	Utility Failure, Arson
Holy Trinity Greek Orthodox Church	68 N State St.	225-2961	3E & 4E	W19	Utility Failure, Arson
Immaculate Conception Church	9 Bonney St	753-4413	3E & 4E	W20	Utility Failure, Arson
Immaculate Heart of Mary	180 Loudon Rd.	224-4394	3E & 4E	W21	Utility Failure, Arson
Immanuel Community Church	5 Grover St.	224-9238	3E & 4E	W22	Utility Failure, Arson
Jehovah's Witnesses Kingdom Hall	199 East Side Dr.	228-0118	3E & 4E	W23	Utility Failure, Arson
New Chapel (SPS)	46 Rectory Rd.	229-4600	3E & 4E	W24	Utility Failure, Arson, Flooding

Table 7, continued
Churches

Facility Name	Address	Phone	Maps (W key)	Map Index	Hazard the Site is Most Susceptible to
New Life Fellowship	21 Dunklee St.	228-8888	3E & 4E	W25	Utility Failure, Arson
Oasis Christian Church	70 Pembroke Rd.	N/A	3E & 4E	W26	Utility Failure, Arson
Old Chapel (SPS)	56 Rectory Rd.	229-4600	3E & 4E	W27	Utility Failure, Arson, Flooding
Sacred Heart Church	52 Pleasant St.	224-0950	3E & 4E	W28	Utility Failure, Arson
Salvation Army	58 Clinton St.	225-5586	3E & 4E	W29	Utility Failure, Arson
Seventh-Day Adventist Church	310 Sheep Davis Rd.	224-3641	3E & 4E	W30	Utility Failure, Arson
South Congregational Church	27 Pleasant St.	224-2521	3E & 4E	W31	Utility Failure, Arson
St. John's Church	72 S Main St.	224-2328	3E & 4E	W32	Utility Failure, Arson
St. Paul's Church	21 Centre St.	224-2523	3E & 4E	W33	Utility Failure, Arson
St. Peter's Church	135 N Main St.	225-2131	3E & 4E	W34	Utility Failure, Arson
Temple Beth Jacob	67 Broadway	228-8581	3E & 4E	W35	Utility Failure, Arson
Trinity Baptist Church	80 Clinton St.	225-3999	3E & 4E	W36	Utility Failure, Arson
Unitarian Universal Church	274 Pleasant St.	224-0291	3E & 4E	W37	Utility Failure, Arson
United Baptist Church	39 Fayette St.	224-7755	3E & 4E	W38	Utility Failure, Arson
United Church of Penacook	21 Merrimack St.	753-4072	3E & 4E	W39	Utility Failure, Arson
Wesley United Methodist Church	79 Clinton St.	224-7413	3E & 4E	W40	Utility Failure, Arson
West Congregational Church	499 N State St.	224-4142	3E & 4E	W41	Utility Failure, Arson
Word of Life Christian Fellowship	95 Old Loudon Rd.	228-2444	3E & 4E	W42	Utility Failure, Arson

Sources: Fire Department, Hazard Mitigation Plan Update Task Force 2011

Table 7A
Cemeteries

Facility Name	Address	Phone	Maps (Y key)	Map Index	Hazard the Site is Most Susceptible to
Blossom Hill Cemetery	207 North State St.	225-3911	3F & 4F	Y1	Wildfire, Severe Winter Weather
Calvary Cemetery	N. State St next to Blossom Hill	225-3911	3F & 4F	Y2	Wildfire, Severe Winter Weather
Catholic Portion of Woodlawn Cemetery	Village Street	225-3911	3F & 4F	Y3	Wildfire, Severe Winter Weather
Cemetery	Elm St. (Penacook) between 132-152	N/A	3F & 4F	Y4	Wildfire, Severe Winter Weather
Maple Grove Cemetery	Sewalls Falls @ Fisherville Rds.	225-3911	3F & 4F	Y5	Wildfire, Severe Winter Weather
Millville Cemetery	Hopkinton Rd.	225-3911	3F & 4F	Y6	Wildfire, Severe Winter Weather
NH Hospital Cemetery	Clinton St.	271-5555	3F & 4F	Y7	Wildfire, Severe Winter Weather
Old Fort Cemetery	Opp. 15 Shawmut St.	225-3911	3F & 4F	Y8	Wildfire, Severe Winter Weather
Old North Cemetery	North State St.	225-3911	3F & 4F	Y9	Wildfire, Severe Winter Weather
Pine Grove Cemetery	Cemetery St.	225-3911	3F & 4F	Y10	Wildfire, Severe Winter Weather
Soucook Cemetery	Josiah Bartlett Rd.	225-3911	3F & 4F	Y11	Wildfire, Severe Winter Weather
Stickney Hill Cemetery	Stickney Hill Rd.	225-3911	3F & 4F	Y12	Wildfire, Severe Winter Weather
Woodlawn Cemetery	Village St. Opp. Allen St	225-3911	3F & 4F	Y13	Wildfire, Severe Winter Weather

Sources: Fire Department, Hazard Mitigation Plan Update Task Force 2011

Table 7B
Hazardous Materials Facilities

Facility Name	Address	Phone	Maps (Z key)	Map Index	Hazard the Site is Most Susceptible to
7 - Eleven	125 Loudon Rd.	228-3033	3G & 4G	Z1	Hazardous Materials, Economic
AASF/National Guard	26 Regional Dr.	225-1234	3G & 4G	Z2	Hazardous Materials, Terrorism, Enemy Attack
Advanced Recycling	14 Poplar Ave.	781-706-7003	3G & 4G	Z3	Hazardous Materials, Flooding
American Brake Service	157 Loudon Rd.	225-2244	3G & 4G	Z4	Hazardous Materials
Angelo's Concord Car Care	236 N. Main St.	224-9631	3G & 4G	Z5	Hazardous Materials
Ararat Forge	135 Hall St.	224-6827	3G & 4G	Z6	Hazardous Materials
ASA Automotive Supply Assoc.	129 Manchester St.	225-4000	3G & 4G	Z7	Hazardous Materials
AT&T Broadband	Integra Dr.	508-208-7507	3G & 4G	Z8	Hazardous Materials, Utility Failure
AT&T Wireless	102 Little Pond Rd.	800-832-6662	3G & 4G	Z9	Hazardous Materials, Utility Failure
AT&T Wireless	2 Pillsbury St.	800-832-6662	3G & 4G	Z10	Hazardous Materials, Utility Failure
AT&T Wireless	22 Bridge St.	800-832-6662	3G & 4G	Z11	Hazardous Materials, Utility Failure
B&G Sheet Metal	8 McGuire St.	224-0480	3G & 4G	Z12	Hazardous Materials
Beauregard Equipment	231 Sheep Davis Rd.	225-6621	3G & 4G	Z13	Hazardous Materials
Beaver Meadow Golf Course	Sewalls Falls Rd.	228-8954	3G & 4G	Z14	Hazardous Materials
Beede Electric	88 Village St	753-6362	3G & 4G	Z15	Hazardous Materials, Utility Failure
Bow Finishing Co.	27 Terrill Park Dr.	228-0330	3G & 4G	Z16	Hazardous Materials, Utility Failure, Fire
Boyce Highlands	14 Whitney Rd.	753-1042	3G & 4G	Z17	Hazardous Materials, Fire
Bradford Networks	162 Pembroke Rd.		3G & 4G	Z18	Hazardous Materials
Brooks Pharmacy	165 N. Main St.	223-6718	3G & 4G	Z19	Hazardous Materials, Economic
Brownfield Site	West of Hall St.	N/A	3G & 4G	Z20	Hazardous Materials, Wildfire
Capital Offset Co. Inc.	181 N. Main St.	225-3308	3G & 4G	Z21	Hazardous Materials, Economic
Capitol Farms	188 Pleasant St.	224-3511	3G & 4G	Z22	Hazardous Materials, Economic
Carter Hill Orchard	5 Carter Hill Rd.	225-2625	3G & 4G	Z23	Hazardous Materials, Downbursts/High Winds
CED-Twin State Electric Supply	254 Sheep Davis Rd.	228-3785	3G & 4G	Z24	Hazardous Materials, Economic
Chadwick-Baross Western Division	237 Sheep Davis Rd.	224-4063	3G & 4G	Z25	Hazardous Materials, Economic
Cohen Steel Supply	10 Basin St	225-2047	3G & 4G	Z26	Hazardous Materials
Comcast of Concord	7 Integra Dr.	800-566-9979	3G & 4G	Z27	Hazardous Materials, Utility Failure
Comfort Inn	71 Hall St.	226-4100	3G & 4G	Z28	Hazardous Materials, Economic
Concord Agway Crops Center	6 S. Commercial St.	224-7592 / 878-0575	3G & 4G	Z29	Hazardous Materials, Utility Failure, Fire

Table 7B, continued
Hazardous Materials Facilities

Facility Name	Address	Phone	Maps (Z key)	Map Index	Hazard the Site is Most Susceptible to
Concord Airport	71 Airport Rd.	228-2267	3G & 4G	Z30	Hazardous Materials, Wildfire, High Winds
Concord Coach Lines	7 Langdon St.	228-3535	3G & 4G	Z31	Hazardous Materials, Fire
Concord Country Club	22 Country Club Ln.	228-0232	3G & 4G	Z32	Hazardous Materials
Concord Hospital	250 Pleasant St.	225-2711	3G & 4G	Z33	Hazardous Materials
Concord Hospital at Horseshoe Pond	Commercial St.	225-2711	3G & 4G	Z34	Hazardous Materials
Concord Irving Heating Oil	54 Chenell Dr.	800-660-7724	3G & 4G	Z35	Hazardous Materials, Sabotage
Concord Litho Group	92 Old Turnpike Rd.	225-3328	3G & 4G	Z36	Hazardous Materials
Concord Monitor	1 Monitor Dr.	224-5301	3G & 4G	Z37	Hazardous Materials
Concord Paper & Chemicals	10 Ferry St.	225-9880	3G & 4G	Z38	Hazardous Materials
Concord Photo Engraving	12 Commercial St.	225-3681	3G & 4G	Z39	Hazardous Materials
Concord Water Treatment Facility	53 Hutchins St.	225-8691 / 225-8696	3G & 4G	Z40	Hazardous Materials, Terrorism, Biological
Cumberland Farms	417 S. Main St	228-9380	3G & 4G	Z41	Hazardous Materials
Cumberland Farms	196 N. Main St	228-4263	3G & 4G	Z42	Hazardous Materials
Cumberland Farms	165 N. Main St.	226-1880	3G & 4G	Z43	Hazardous Materials
Cumberland Farms	47 Fisherville Rd.	223-2567	3G & 4G	Z44	Hazardous Materials
Cumberland Farms	102 Manchester St.	224-7814	3G & 4G	Z45	Hazardous Materials
Duncraft	102 Fisherville Rd.	224-0200	3G & 4G	Z46	Hazardous Materials
East Concord Mobil	1 Eastman St.	226-9610	3G & 4G	Z47	Hazardous Materials
Eastern Analytical	21 Chenell Dr.	228-0525	3G & 4G	Z48	Hazardous Materials
Electropac	70 Pembroke Rd.	224-1961 / 207-324-4140	3G & 4G	Z49	Hazardous Materials
Energy North Propane	75 Regional Dr.	225-6660	3G & 4G	Z50	Hazardous Materials
Evans Printing	276 N. State St.	225-5529	3G & 4G	Z51	Hazardous Materials
Everett Arena	15 Loudon Rd.	225-5633 / 225-8570	3G & 4G	Z52	Hazardous Materials
Exxon Station	196 N. Main St.	908-474-3002	3G & 4G	Z53	Hazardous Materials
Fairpoint	1 Horseshoe Pond Ln.	877-746-3198	3G & 4G	Z54	Hazardous Materials, Utility Failure
Fairpoint Concord	12 South St	877-746-3198	3G & 4G	Z55	Hazardous Materials, Utility Failure
Fairpoint Garage	64 Regional Dr	877-746-3198	3G & 4G	Z56	Hazardous Materials, Utility Failure
Fairpoint Penacook	Charles St.	877-746-3198	3G & 4G	Z57	Hazardous Materials, Utility Failure
Grand Central Printing	220 Loudon Rd.	224-1995	3G & 4G	Z58	Hazardous Materials
Guinard's Texaco	336 Village St.	753-9386	3G & 4G	Z59	Hazardous Materials

Table 7B, continued
Hazardous Materials Facilities

Facility Name	Address	Phone	Maps (Z key)	Map Index	Hazard the Site is Most Susceptible to
Hannaford	73 Fort Eddy Rd.	228-2060	3G & 4G	Z60	Hazardous Materials
HealthSouth Rehab Hospital	254 Pleasant St.	226-9821	3G & 4G	Z61	Hazardous Materials
Hess Gas Station	15 Hall St.	472-3094 / 226-2005	3G & 4G	Z62	Hazardous Materials
Hoyt Electrical	23 Meter St.	753-6321	3G & 4G	Z63	Hazardous Materials
HP Hood LLC	330 N. State St	225-3379	3G & 4G	Z64	Hazardous Materials
Irving Oil	200 N. State St.	224-4051	3G & 4G	Z65	Hazardous Materials
Johnny Prescott & Son Oil Co, Inc.	122 Airport Rd	225-5991	3G & 4G	Z66	Hazardous Materials, Economic
Johnson & Dix Fuel Corp.	112 Hall St.	224-7451	3G & 4G	Z67	Hazardous Materials, Economic
LAD Welding and Fabrication	33 Fisherville Rd.	228-6617	3G & 4G	Z68	Hazardous Materials, Fire
Loudon Rd. Sunoco	114 Loudon Rd.	228-8888 / 224-7500	3G & 4G	Z69	Hazardous Materials
Lowes Of Concord, NH	90 Fort Eddy Rd	336-658-4000	3G & 4G	Z70	Hazardous Materials
Manchester St. Sunoco	15 Manchester St.	228-8888 / 224-7500	3G & 4G	Z71	Hazardous Materials
Market Basket	80 Storrs St.	228-3228 508-851-8000	3G & 4G	Z72	Hazardous Materials
Market Basket	23 Fort Eddy Rd.	224-5479 508-851-8000	3G & 4G	Z73	Hazardous Materials
Melexis	41 Locke Rd.	223-2362	3G & 4G	Z74	Hazardous Materials
Merrill's	29B Pembroke Rd.	224-9925	3G & 4G	Z75	Hazardous Materials
Merrimack Sheet Metal	119 Hall St.	224-7766	3G & 4G	Z76	Hazardous Materials
Mobil Service Station	110 Loudon Rd.	224-4736	3G & 4G	Z77	Hazardous Materials
National Grid LNG Facility	Broken Bridge Rd.	781-466-5280	3G & 4G	Z78	Hazardous Materials, Terrorism
NE Motor Freight	118 Hall St.	224-6444	3G & 4G	Z79	Hazardous Materials
New England Positioning Systems	58 Chenell Dr.	800-421-0125	3G & 4G	Z80	Hazardous Materials
NH Bureau of Radiological Health	6 Hazen Dr.	271-2023	3G & 4G	Z81	Hazardous Materials, Radiological
NH Dept. of Environmental Services	6 Hazen Dr.	271-3503	3G & 4G	Z82	Hazardous Materials
NH Dept. of Public Health Labs	6 Hazen Dr.	271-4501	3G & 4G	Z83	Hazardous Materials, Biological
NH Dept of Transportation	17 Stickney Ave.	271-1661	3G & 4G	Z84	Hazardous Materials
NH Fire Academy	East of Sheep Davis Rd.	N/A	3G & 4G	Z85	Hazardous Materials
NH State Police Forensic Lab	10 Hazen Dr.	271-3573	3G & 4G	Z86	Hazardous Materials
NH Technical Institute	31 College Dr.	271-2474	3G & 4G	Z87	Hazardous Materials
NHTI Police Standards	17 Institute Dr.	271-2133	3G & 4G	Z88	Hazardous Materials
Northeast Delta Dental	1 Delta Drive	223-1000	3G & 4G	Z89	Hazardous Materials

Table 7B, continued
Hazardous Materials Facilities

Facility Name	Address	Phone	Maps (Z key)	Map Index	Hazard the Site is Most Susceptible to
Pan Am Railway/ Maine Central Railway/ Boston & Maine Railway	N/A	800-955-9208	Not on map	Not on map	Hazardous Materials, Flooding, Economic
Penacook Fiber and Tannery Building	382 Village Street	224-6500	3G & 4G	Z90	Natural
Praxair Surface Technologies	146 Pembroke Rd.	224-9585	3G & 4G	Z91	Technological
PSNH Oak Hill Substation	Farmwood Rd.	800-386-4086	3G & 4G	Z92	Technological
Regional MFG Specialists INC	24 Chenell Dr	410-6650	3G & 4G	Z93	Technological
Riverhill Market	189 Carter Hill Rd.	753-9300	3G & 4G	Z94	Technological
Sabbow & Co, Inc - NH Wilbert Vault	77 Regional Dr.	225-6291	3G & 4G	Z95	Technological
Sam's Club	304 Sheep Davis Rd.	226-1255	3G & 4G	Z96	Technological
Sanels Auto Parts	219 S. Main St.	225-4100	3G & 4G	Z97	Technological
Schwan's Sales Enterprises Inc.	28 Industrial Park Dr.	224-9646	3G & 4G	Z98	Technological
Seacoast Scaffold & Equipment	243 Sheep Davis Rd.	224-0999	3G & 4G	Z99	Technological
Sears Auto Center	270 Loudon Rd.	229-0195	3G & 4G	Z100	Technological
Shaw's Supermarket	20 Fort Eddy Rd.	228-0770	3G & 4G	Z101	Technological
Shaw's Supermarket	20 D'Amante Drive	228-1440	3G & 4G	Z102	Technological
Shell Service Station	24 Loudon Rd.	224-9261	3G & 4G	Z103	Technological
Shell Service Station	242 Sheep Davis Rd	225-3000	3G & 4G	Z104	Technological
Snow Dump Site Airport Road	Airport Road	N/A	3G & 4G	Z105	Natural
Snow Dump Site Loudon Road	Loudon Road	N/A	3G & 4G	Z106	Natural
South Main Mobil	81 S. Main St.	224-7500	3G & 4G	Z107	Technological
Sprint Inc.	219A S. Main St.	225-4100	3G & 4G	Z108	Technological
St. Paul's Anhydrous Ammonia Systems	325 Pleasant St.	229-4646	3G & 4G	Z109	Technological
St Paul's (Bulk #6 Heating Fuel Storage)	325 Pleasant St.	229-4646	3G & 4G	Z110	Technological
St Paul's (Heating Plant)	325 Pleasant St.	229-4646	3G & 4G	Z111	Technological
St. Paul's (Hockey Rink)	325 Pleasant St.	229-4646	3G & 4G	Z112	Technological
St. Paul's (Science Lab)	325 Pleasant St.	229-4646	3G & 4G	Z113	Technological
Star Granite Co.	41 Little Pond Rd.	224-5355	3G & 4G	Z114	Technological
State of NH DOT Sign Shops	Sheep Davis Rd.	271-1684	3G & 4G	Z115	Technological
Stowe-Woodward Co.	60 Old Turnpike Rd.	224-6300	3G & 4G	Z116	Technological
Swenson Granite Co.	369 N. State St.	225-2783	3G & 4G	Z117	Technological

Table 7B, continued
Hazardous Materials Facilities

Facility Name	Address	Phone	Maps (Z key)	Map Index	Hazard the Site is Most Susceptible to
Tennessee Gas Line Dump Station	Manchester Street	800-231-2800	3G & 4G	Z118	Technological
Tennessee Gas Pipeline	Route 106	800-231-2800	Not on map	Not on map	Technological
The Home Depot	42 D'Amante Dr.	227-0580	3G & 4G	Z119	Technological
Thermal Technology	90 Airport Rd.	225-6605	3G & 4G	Z120	Technological
Thirty Pines Market	9 Village St.	N/A	3G & 4G	Z121	Natural
Transformer Services Inc (TSI)	74 Regional Dr.	224-4006	3G & 4G	Z122	Technological
Unitil	5 McGuire St.	224-2311	3G & 4G	Z123	Technological
W.D. Matthews Machinery Co.	309 Sheep Davis Rd	225-1171 / 207-784-9311	3G & 4G	Z124	Technological
W.E. Aubuchon	80 S. Main St.	228-5500	3G & 4G	Z125	Technological
Wheelabrator	11 Whitney Rd.	753-8411	3G & 4G	Z126	Technological
White Farm	144 Clinton St.	225-0870	3G & 4G	Z127	Human
White Mountain Imaging	172 Pembroke Rd.	228-5222	3G & 4G	Z130	Technological
Woodpro	287 S. Main St.	226-2303	3G & 4G	Z128	Facility gone
WWTP	7 Penacook St.	225-8691	3G & 4G	Z130	Equipment Failure
WWTP #1	125 Hall St.	225-8691	3G & 4G	Z131	Equipment Failure
WWTP#2	W. Portsmouth St.	225-8691	3G & 4G	Z132	Equipment Failure
WWTP#3	Chenell Dr.	225-8691	3G & 4G	Z133	Equipment Failure
WWTP#4	270 Loudon Rd.	225-8691	3G & 4G	Z134	Equipment Failure
WWTP#5	Hannah Dustin Dr.	225-8691	3G & 4G	Z135	Equipment Failure

*Sources: Hazardous Materials Tier 2 Report; Fire Department,
Hazard Mitigation Plan Update Task Force 2011*

In addition, the Public Works facility, the Combined Operations and Maintenance Facility (COMF), 311 North State Street at 228-2737, should also be listed as a Hazardous Materials Facility. The facility has a fueling station with gasoline and diesel stored underground and could be vulnerable to human threats. Murray Farms on River is also a Hazmat Facility.

HISTORIC/OTHER CONSIDERATIONS

Historic resources and structures provide that link to the cultural history of a City. They may also be more vulnerable to certain hazards since they often have fewer safety devices installed or have limited access. Recreational facilities are places where large groups of people can and do gather. Campgrounds in particular may be more vulnerable to natural disasters because the shelters are light and temporary.

Table 8
Historic Sites and Buildings

Facility Name	Address	Phone	Maps (H Key)	Map Index	Hazard the Site is Most Susceptible to
2 1/2 Beacon Street (NRHP)	2 ½ Beacon St.	N/A	3F & 4F	H1	Fire
Beaver Meadow Brook Archaeological Site (NRHP)	2 nd St.	N/A	3F & 4F	H2	Fire
Capitol Center for the Arts	44 South Main St.	225-1111	3F & 4F	H3	Fire
Carrigan Commons	244 N. Main St	225-8346	3F & 4F	H4	Fire
Carter Hill Orchard	Carter Hill Rd.	225-2625	3F & 4F	H5	Fire, Wind, Biological, Severe Winter Weather
Chamberlin House (NRHP)	Pleasant St.	N/A	3F & 4F	H6	Fire
Chase Block	13-19 N. Main St.	225-7737	3F & 4F	H7	Fire
Concord City Hall	41 Green St.	225-8500	3F & 4F	H8	Fire
Concord Civic District (NRHP)	North State St.	N/A	3F & 4F	H9	Fire
Concord Theatre	16-18 S. Main St.	228-8254	3F & 4F	H10	Fire
Downtown Historic Area	Main St.	N/A	3F & 4F	H11	Fire
Eagle Hotel (NRHP)	110 N Main St.	N/A	3F & 4F	H12	Fire
Eagle Stable Complex	7 Eagle Square	228-6688	3F & 4F	H13	Fire
Eastman Street Historic Area	Eastman St.	N/A	3F & 4F	H14	Fire
Endicott Hotel (NRHP)	3 South Main St.	228-1000	3F & 4F	H15	Fire
Farrington House (NRHP)	30 South Main St.	645-6450	3F & 4F	H16	Fire
Fire Department Headquarters	24 Horseshoe Pond Ln.	225-8650	3F & 4F	H17	Fire
Franklin Pierce House (NRHP)	52 South Main St.	N/A	3F & 4F	H18	Fire
Franklin Pierce (UNH School of Law)	2 White St.	228-1963	3F & 4F	H19	Fire
Gas House	South Main St.	N/A	3F & 4F	H20	Fire
Gov. Frank West Rollins House (aka Governor's Mansion) (NRHP)	Fort Eddy Rd.	N/A	3F & 4F	H21	Fire
Henry J. Crippen House (NRHP)	Pearl St.	N/A	3F & 4F	H22	Fire
Leavitt Farm (NRHP)	Old Loudon Rd.	N/A	3F & 4F	H23	Fire
Lewis Downing Jr. House (NRHP)	Pleasant St.	N/A	3F & 4F	H24	Fire

Table 8, continued
Historic Sites and Buildings

Facility Name	Address	Phone	Maps (H Key)	Map Index	Hazard the Site is Most Susceptible to
Merrimack County Bank (NRHP)	214 North Main St.	225-2793	3F & 4F	H25	Fire
Merrimack County Court House (NRHP)	163 North Main St.	225-5451	3F & 4F	H26	Fire
Millville School (NRHP)	2 Fiske Rd.	229-4646	3F & 4F	H27	Fire
Morrill Brothers Building	55 N. Main St.	N/A	3F & 4F	H28	Fire, Earthquake
Museum of NH History	6 Eagle Square	228-6688	3F & 4F	H29	Fire
NH Division of Historical Resources	19 Pillsbury St.	271-3483	3F & 4F	H30	Fire
NH Historical Society	30 Park St.	228-6688	3F & 4F	H31	Fire
NH Records and Archives	71 S. Fruit St.	271-2236	3F & 4F	H32	Fire
NH Savings Bank Building (NRHP)	95-97 N. Main St.	228-0477	3F & 4F	H33	Fire
NH State House	107 North Main St.	271-1110	3F & 4F	H34	Fire, Human
NH State Library	20 Park St.	271-2144	3F & 4F	H35	Fire
North Main Street Historic District	North Main St.	N/A	3F & 4F	H36	Fire
Old Post Office - LOB (NRHP)	33 North State St.	271-5555	3F & 4F	H37	Fire, Human
Penacook Historic Area	East St.	N/A	3F & 4F	H38	Fire
Phenix Hall	40 N Main St.	228-6688	3F & 4F	H39	Fire
Pierce Manse	14 Horseshoe Pond Ln.	224-5954	3F & 4F	H40	Fire
Pleasant View Home (NRHP)	227 Pleasant St.	225-3970	3F & 4F	H41	Fire
Reuben Foster House and Perley Cleaves House (NRHP)	62 & 64 North State St.	N/A	3F & 4F	H42	Fire
Rolfe Barn	16 Penacook St.	N/A	3F & 4F	H43	Fire
Sheraton Building	118 N. Main St.	225-7737	3F & 4F	H44	Fire
St. Paul's School Complex Area	325 Pleasant St.	229-4646	3F & 4F	H45	Fire
Upham-Walker House (NRHP)	18 Park St.	271-5555	3F & 4F	H46	Fire
White Farm (NRHP)	144 Clinton St.	225-0870	3F & 4F	H47	Fire
White Park (NRHP)	White St.	225-8690	3F & 4F	H48	Fire, Wind, Severe Winter Weather

Sources: 1998 National Register of Historic Places (NRHP); Fire Department, Hazard Mitigation Plan Update Task Force 2011, Concord Historical Society

Table 8A
Recreational Sites

Facility Name	Address	Phone	Maps (R Key)	Map Index	Hazard the Site is Most Susceptible to
Beaver Meadow Golf Course	Sewalls Falls Rd.	228-8954	3E & 4E	R1	Economic Depression
Beaver Meadow Park	Sewalls Falls Rd.	225-8690	3E & 4E	R2	Severe Winter Weather
Bicentennial Square	Odd Fellows Avenue		3E & 4E	R3	Vandalism
Concord Country Club	22 Country Club Ln.	228-0232	3E & 4E	R4	Economic Depression
Contoocook Park	End Of Electric Ave.	225-8690	3E & 4E	R5	Flooding
Eagle Square	Eagle Square		3E & 4E	R6	Vandalism
Everett Arena / Skate Park	15 Loudon Rd.	228-2784	3E & 4E	R7	Structure Collapse
Fletcher-Murphy Playground	South Street & Fayette Street		3E & 4E	R8	Vandalism
Garrison Park	Hutchins St.	225-8690	3E & 4E	R9	Severe Winter Weather
Grappone Park	Off of Franklin/Jennings	225-8690	3E & 4E	R10	Severe Winter Weather
Keach Park	Loudon Rd.	225-8690	3E & 4E	R11	Severe Winter Weather
Kimball Park	173 North Main Street		3E & 4E	R12	Vandalism
Kiwanis Riverfront Park	15 Loudon Road		3E & 4E	R13	Vandalism
Memorial Field	South Fruit St.	225-8690	3E & 4E	R14	Severe Winter Weather
Merrill Park	Eastman St.	225-8690	3E & 4E	R15	Severe Winter Weather
Reed Playground	Hall Street		3E & 4E	R16	Vandalism
Rolfe Park	Community Dr.	225-8690	3E & 4E	R17	Severe Winter Weather
Rollins Park	Broadway St.	225-8690	3E & 4E	R18	Severe Winter Weather
Russell Martin Park	Iron Works Rd.	225-8690	3E & 4E	R19	Severe Winter Weather
Sanel Park	Old Suncook Rd.	225-8690	3E & 4E	R20	Severe Winter Weather
Sewalls Falls State Rec. Area	Sewalls Falls Rd.	225-8690	3E & 4E	R21	Severe Winter Weather
St Paul's Athletic Facility	325 Pleasant St.	229-4646	3E & 4E	R22	Severe Winter Weather
Terrell Park/Rotary Park	Old Turnpike Rd.	225-8690	3E & 4E	R23	Flooding, Severe Winter Weather
White Park	Centre St.	225-8690	3E & 4E	R24	Flooding, Severe Winter Weather
William P. Thompson Playground	Short Street & N Spring St		3E & 4E	R25	Vandalism
Winant Park	Access via 36 Fisk Road		3E & 4E	R26	Vandalism
West Street Playground	West Street & State Street		3E & 4E	R27	Vandalism

Sources: Fire Department, Hazard Mitigation Plan Update Task Force 2011

Camp Spaulding on Bog Road, a snowmobile bridge over the Contoocook River, and the Contoocook River Canoe Company are also recreational sites in the City.

Table 8B
Places of Assembly

Facility Name	Address	Phone	Maps (G Key)	Map Index	Hazard the Site is Most Susceptible to
Abbott Village Club House	24 Callaway Dr.	225-9630	3E & 4E	G1	Technological
American Legion #21	7 Perley St.	228-8931	3E & 4E	G2	Technological
American Legion #31	11 Charles St. (Penacook)	753-9372	3E & 4E	G3	Technological
Annicchiarico Theater	1 Thompson St.	224-4059	3E & 4E	G4	Technological
Bektash Shriner's Temple	189 Pembroke Road	225-5372	3E & 4E	G5	Technological
Bishop Brady High School	25 Columbus Ave.	224-7418	3E & 4E	G6	Technological
Camp Spaulding	210 Bog Rd.	518-4330	3E & 4E	G7	Technological
Canterbury Meadows Community Bldg	227 Loudon Rd.	224-7441	3E & 4E	G8	Technological
Capitol Center for the Arts	44 South Main St.	225-1111	3E & 4E	G9	Technological
City Auditorium	41 Green St.	228-2793	3E & 4E	G10	Technological
Community Players Bldg	435 Josiah Bartlett Rd.	224-4905	3E & 4E	G11	Technological
Concord Boys and Girls Club	55 Bradley St.	224-1061	3E & 4E	G12	Technological
Concord (Green St) Community Center	39 Green Street	225-8690	3E & 4E	G13	Technological
Concord Country Club	22 Country Club Ln.	228-0232	3E & 4E	G14	Technological
Crestwood Community Center	14 Crestwood Dr.	224-4464	3E & 4E	G15	Technological
Eagles Club	36 South Main St.	228-8922	3E & 4E	G16	Technological
East Side Community Center	18 Eastman St.	225-8690	3E & 4E	G17	Technological
Everett Arena	15 Loudon Rd.	225-8525	3E & 4E	G18	Technological
First Baptist Church Recreation Fields	91 Clinton St.	225-2848	3E & 4E	G19	Technological
Grappone Conference Center	40 Commercial St.	225-0303	3E & 4E	G20	Technological
Heights Community Center	22 Canterbury Rd	225-8690	3E & 4E	G21	Technological
IBEW Hall	48 Airport Rd.	225-2520	3E & 4E	G22	Technological
Kimball Jenkins Carriage House	266 N. Main St	225-3932	3E & 4E	G23	Technological
Knights of Columbus	52 Bradley St.	228-8927	3E & 4E	G24	Technological
Main Street Conflagration Area	Main Street	N/A	3E & 4E	G25	Technological
Masonic Temple	53 Iron Works Rd.	228-8901	3E & 4E	G26	Technological
McAuliffe-Shepard Discovery Center	2 Institute Dr.	271-7831	3E & 4E	G27	Technological
Moose Club	170 North State St.	N/A	3E & 4E	G28	Technological
NH Fire Academy	98 Smokey Bear Blvd	223-4200	3E & 4E	G29	Technological
NH National Guard Armory	24 Pembroke Rd.	225-1200	3E & 4E	G30	Technological

Table 8B, continued
Places of Assembly

Facility Name	Address	Phone	Maps (G Key)	Map Index	Hazard the Site is Most Susceptible to
NH State House	107 N. Main St.	271-1110	3E & 4E	G31	Technological
NHTI Farnum Hall	30 College Dr.	271-6484	3E & 4E	G32	Technological
Odd Fellows Hall	179 Pleasant St.	225-6941	3E & 4E	G33	Technological
Penacook Community Center	76 Community Dr.	753-9700	3E & 4E	G34	Technological
Racquet Club of Concord	10 Garvins Falls Rd	224-7787	3E & 4E	G35	Technological
Regal Cinema	280 Loudon Rd.	226-3800	3E & 4E	G36	Technological
Salvation Army	58 Clinton St.	225-5587	3E & 4E	W29	Technological
Snowshoe Club	45 Via Tranquilla	N/A	3E & 4E	G37	Technological
St Paul's Blass Club House	41 Pellican Alley	229-4646	3E & 4E	G38	Technological
St Paul's Gymnasium	325 Pleasant Street	229-4646	3E & 4E	G39	Technological
St Paul's Hockey Center	25-29 Hockey Ln.	229-4646	3E & 4E	G40	Technological
St Paul's Memorial Hall	38 Dunbarton Rd.	229-4646	3E & 4E	G41	Technological
St Paul's Tracy Memorial Theatre	101 Rectory Rd	229-4646	3E & 4E	G42	Technological
VFW Post 1631	6 Court St.	228-8907	3E & 4E	G43	Technological
West Street Ward House	41 West St	225-8691	3E & 4E	G44	Technological
YMCA of Concord	15 North State St.	228-YMCA	3E & 4E	G45	Technological

Sources: Fire Department, Hazard Mitigation Plan Update Task Force 2011

FUTURE DEVELOPMENT

Not only do existing sites have susceptibility to different types of hazards, consideration must be granted to new development projects in a community. Concord has multiple future development projects on the horizon, shown in **Table 9**, which have been presented to, or will soon be presented to, the Planning Board.

Table 9
Future Development

Facility Name	Location	Type of Facility	Maps (X Key)	Map Index	Notes	Hazard the Site is Most Susceptible to
Abbott Village	Route 3	Multi-Family Housing	3C & 4C	X1	85 townhouses across from Swenson's	Technological
CATCH Neighborhood	Storrs St	Multi-Family Housing	3C & 4C	X2	45 units	Technological
Concord Steam Relocation Project	Langdon Ave	Woodchip Fired Steam Plant	3C & 4C	X3	17 MW Electricity Generator	Technological
Duprey Center	South Main St	Office Building	3C & 4C	X4	91,500 sf	Technological
Glen Ellen	Hoit Rd	Single Family Condo	3C & 4C	X5	35 Units	Technological
LAT Holdings	Break O'Day Dr	Office Building	3C & 4C	X6	53,000 sf	Technological
Math & Science Building	St. Paul School	Educational/Institutional	3C & 4C	X7	90,000 sf	Technological
NH Co-op Recycling Facility	Whitney Rd	Single Stream Recycling Facility	3C & 4C	X8	47,600 sf	Technological
Oxbow Bluff	Manor Rd	Single Family Condo	3C & 4C	X9	66 units	Technological
Penacook Tannery	23-35 East Street	Mixed Use	3C & 4C	X10	No further information on its refurbishment or future uses	Technological
Sandwood Crossing	Borough Road	Single Family / Condo Housing	3C & 4C	X11	204 units	Technological
The Vineyards	Bog Road	Multi-Family Housing	3C & 4C	X12	102 townhouse / duplex dwellings	Technological
Whispering Heights	Curtisville Road	Single Family Housing	3C & 4C	X13	90 units	Technological

Sources: Concord Community Development Department 2011

Vintage Estates at Kyle Road in Penacook is single family housing of 22 units. Also a Bindery project at 43 and 45 North Main Street, which is a multi-tenant commercial project about 64,000 square feet. Both are subject to technological hazards.

HOMES WITHIN THE FLOODPLAIN

As discussed in greater detail in **CHAPTER 4. POTENTIAL LOSSES**, 142 residential parcels with buildings on them (including single-family, multi-family, apartments, condos, and manufactured homes) are located in the floodplain. Building footprints of all buildings in Concord along with the floodplain extent are displayed on *Map 1: Potential Hazards*.

Additionally, the land along the Merrimack River is home to 15-20 homeless people who reside in tents. Many live in "Tent City" year-round and stay in the shelters (**Table 5E**) during the coldest winter nights.

EVACUATION ROUTES

The primary and secondary evacuation routes out of Concord are depicted on *Map 1: Potential Hazards*.

Primary Evacuation Routes

- Interstate 93
- Interstates 89
- Interstate 393

There are three highways that serve as primary evacuation Interstates: Interstates 93 and 89, and Interstate 393. These highways were chosen as primary evacuation Interstates because they can hold high volumes of traffic, and they would move this traffic most efficiently. I-93 runs roughly north from Canterbury, south into Bow, Interstate 393 runs from North Main Street east into Pembroke, and I-89 runs west from Hopkinton east to Bow in the southwest corner of Concord. I-393 runs west out of Concord to Route 106 and Epsom (Routes 4 & 202).

However, there are two areas that may be exposed to weather-related risks. I-93 passes over the Merrimack River just under one mile north of intersecting Interstate 393. Interstate 393 crosses the Merrimack River about a half-mile east of intersecting with I-93. These areas represent a slight risk because since they cross the Merrimack River, the bridges could be damaged or destroyed if major flooding were to occur. Interstate 93 passes close to the Merrimack River at the exits for Manchester Road, Loudon Road, and in the area across from the Beaver Meadow Golf Course. This could create significant difficulties in evacuating traffic from Concord if severe flooding occurs.

Secondary Evacuation Routes

- North Main Street (Route 3) north on North State Street/Fisherville Road/Village Street to Daniel Webster Highway in Boscawren or south to South Main Street to Bow
- Pleasant Street (Routes 9 & 202) west into Hopkinton
- South Main Street south to Bow
- Manchester Street (Route 3) south to Pembroke
- Loudon Road (Routes 9 & 202) at Exit 14 east to I-393 / Epsom / Route 106
- Sheep Davis Road (Route 106) north to Loudon or south to Pembroke
- East Side Drive (Route 132) north to Canterbury
- South Street south to Clinton Street/Route 13 west to Bow

There are also eight secondary evacuation routes. These roads were chosen because they can conduct the most traffic (next to Interstate highways) from concentrated areas out of Concord into the surrounding towns. North Main Street (also Route 3), which begins at Pleasant Street runs north and becomes North State Street, Fisherville Road, Village Street, which runs through Penacook Village and into Boscawen, and runs south and becomes South Main Street. Many other secondary evacuation routes stem from both North and South Main Street. A second route, Pleasant Street (Route 9 & 202) runs west into Hopkinton. A third route is South Street, which comes off of Pleasant Street then becomes Clinton Street, then runs west into Bow.

Water Street/Manchester Street (Route 3) branches off of South Main Street to the east and south into Pembroke and serves as the fourth route. Loudon Road (Routes 9 & 202) departs from North Main Street, crosses under I-93 (Exit 14) and runs northeast into Pembroke and is the fifth route. Route 106 (Sheep Davis Road) intersects Loudon Road and I- 393 and is the sixth route, running roughly parallel to the Soucook River north into Loudon and south into Pembroke. The seventh secondary evacuation route is East Side Drive (Route 132). It branches off of Loudon Road and becomes Mountain Road, running along I-93 into Canterbury. These secondary evacuation routes represent some risk to flooding because each one passes over and/or near at least one stream or river. In the event of an emergency, there should be a plan to coordinate evacuation traffic in the appropriate directions.

TRAFFIC ANALYSIS

Three interstate highways run through Concord, as do many secondary roads to conduct the heavy traffic. **Table 10** displays peak day and hour information, total accidents, and average volume on I-93, I-89, I-393, as well as 15 secondary roads. The data can be used to help determine possible locations of hazards, and the evacuation route process. Note that weekend data is not collected. Weekday data, normally Tuesday through Thursday, offers the most typical traffic patterns, except for any special events occurring at this time.

Table 10
Major Roadways and Traffic Characteristics

Major Roadways	Peak Day (s)	a.m Peak Hours	p.m Peak Hours	Total Accidents, 2009	Latest Average Volume
I-93 Southbound	N/A	N/A	N/A	No data	72,000 (2009) between exits 12-13
I-93 Northbound	N/A	N/A	N/A		
I-393 Westbound	N/A	N/A	N/A		39,000 (2009) between exits 1-2
I-393 Eastbound	N/A	N/A	N/A		
I-89 Northbound	N/A	N/A	N/A		68,800 (2008) between exits 2-3
I-89 Southbound	N/A	N/A	N/A		
I-393 Ramps Only	N/A	N/A	N/A	3	10,000 (2007) Fort Eddy Ramp
Route 106 (Sheep Davis Road) (At Loudon TL)	N/A	N/A	N/A	44	17,253 (2004)
North Main Street (Route 3) (North of Warren St.) NB(one direction)	Tuesday - Thursday	11:00	4:00	70	7,337 (2010)
North Main Street (Route 3) (North of Warren St.) SB (one direction)	Tuesday - Thursday	11:00	12:00		6,043 (2010)
Fisherville Road (Route 3) (North of Sewalls Falls Rd.)	Monday - Friday	N/A	N/A	16	11,000 (2008)
Manchester Street (Route 3) (Between Black Hill Roads)	Tuesday - Thursday	7:00	4:00	51	21,501 (2009)
Heights Loudon Road (Route 9) (East of US 3 & 202) EB (one direction)	Tuesday - Thursday	11:00	4:00	281	12,631 (2010)
Heights Loudon Road (Route 9) (East of US 3 & 202) WB (one direction)	Tuesday - Thursday	7:00	4:00		13,234 (2010)
Pleasant (Route 9 & Route 202) (West of North & South State St.)	Tuesday - Thursday	11:00	4:00	66	8,743 (2010)
Regional Drive (West of Industrial Park Drive)	Tuesday - Thursday	7:00	4:00	14 (2010)	7,782 (2010)
Regional Drive (East of Airport Road)	Tuesday - Thursday	7:00	4:00	14 (2010)	9,935 (2010)
Mountain Road (Route 132) (North of Country Club Lane)	N/A	N/A	N/A	12	5,100 (2008)
East Side Drive (Route 132) (South of Portsmouth St.)	Tuesday - Thursday	7:00	4:00	15	8,053 (2010)
Clinton Street (Route 13) (East of Iron Works Rd.)	N/A	N/A	N/A	25	9,800 (2008)
South Fruit Street (South of Pleasant St.)	N/A	N/A	N/A	6	9,700 (2008)
South Main Street (Route 3A) (At Bow TL)	Tuesday - Thursday	8:00	5:00	45	15,091 (2009)
South Street (Route 13) (South of Avon St.)	Tuesday - Thursday	8:00	3:00	14	5,625 (2009)
Airport Road (South of Heights Rd.)	Tuesday - Thursday	11:00	3:00	10	11,707 (2010)

Table 10, continued
Major Roadways and Traffic Characteristics

Major Roadways	Peak Day (s)	a.m Peak Hours	p.m Peak Hours	Total Accidents, 2009	Latest Average Volume
Fort Eddy Road (South of I-393 EB Off-Ramp)	Tuesday - Thursday	11:00	4:00	59	11,888 (2010)
North State Street (North of Warren St.)	Tuesday - Thursday	8:00	4:00	74	6,549 (2009)

Sources: CNHRPC - NH DOT Traffic Volume Report, 24-hour detail sheets.

The City is bisected north to south by the Merrimack River. Four bridges allow vehicle travel across the river in the City. The Soucook River forms the boundary with Pembroke; one bridge on I-393 is considered critical for traffic flow. Village Street in Penacook is the main travelway, with a bridge over the Contoocook River spillway. The Turkey River is the fourth major river in the City. Traffic congestion may occur at these bridges during times of evacuation.

Table 10A displays traffic volume information at these key bridges.

Table 10A
Key Bridges and Traffic Characteristics Over the Rivers

Facility Name	Bridge	Lanes	Red Listed?	Latest & Nearest Average Volume
040/090 (City)	US 3 (Village Street - Penacook) over Contoocook	2	No	6,400 (2006) At Boscawen TL
048/082 (City)	Washington Street over Contoocook Outlet Canal (Penacook)	2	No	3,800 (2008) South of Fowler St
053/071 (City)	Island Road over Contoocook Outlet Canal (Penacook)	2	No	90 (1992)
069/052 (City)	Horsehill Bridge over Contoocook River	2	No	2,900 (2008)
070/117 (City)	Sewalls Falls Roads over Merrimack River	1	Yes	3,100 (2006)
136/117 (State)	I-93 over Merrimack River NB (Ex 15 & 16)	2	Yes	24,000 (2008)
136/116 (State)	I-93 over Merrimack River SB (Ex 15 & 16)	2	No	24,000 (2008)
154/123 (State)	I-393 over Merrimack River	2	No	39,000 (2008)
161/184 (State)	I-393 over Soucook River WB	2	No	15,000 (2008)
162/184 (State)	I-393 over Soucook River EB	2	No	15,000 (2008)
163/056 (City)	Dunbarton Road over Turkey River	2	No	2,700 (2005)
163/111 (City)	Route 9 (Loudon Road) over Merrimack River	4	No	28,000 (2006)
180/063 (State)	Route 13 (Clinton Street) over Turkey River	2	No	9,800 (2008)
183/156 (City)	North Pembroke Road over Soucook River	2	No	13,000 (1992)
185/104 (State)	US 3 (Manchester Street) over Merrimack River	4	No	28,000 (2006)
190/067 (City)	Iron Works Road over Turkey River	2	No	1,100 (2006)
198/146 (State)	Route 106 over Soucook River	2	No	9,900 (2006)
215/124 (State)	US 3 (Manchester Street) over Soucook River	4	No	14,000 (2007)

*Sources: CNHRPC - NH DOT Municipal Red List Bridge Summary; NH DOT Digital Bridge Database 2003;
 NH DOT Traffic Volume Report; NH DOT Concord, NH Count Database 1999-2009*

Since several interstate highways run through Concord, there are many secondary roads which carry a high volume of traffic. Loudon Road in the Heights is the area of the most traffic accidents, with six (6) of the top 15 accident locations in 2010⁴. If an event were to arise where evacuation was necessary, traffic accidents might be likely on Loudon Road. **Table 10B** displays the number of accidents recorded at specific locations.

Table 10B
Top Vehicular Accident Locations, 2010

Location	Number of Accidents
Loudon Rd. @ Ft. Eddy - I 93 Exit 14	38
Manchester St. @ Water St. - I 93 Exit 13	11
Broadway @ West St.	11
Sheep Davis Rd. @ I 393	10
Pleasant St. @ N/S State St.	10
Loudon Rd. @ Sheep Davis Rd.	10
Manchester St. @ Airport Rd.	8
N. State St. @ Centre St.	8
Loudon Rd. @ D'Amante Dr.	8
Water St. @ Hall St.	8
Loudon Rd. @ Hazen Dr.	8
Pleasant St. @ N/S Main St.	7
N. Spring St. @ Centre St.	7
Loudon Rd. @ Blodgett St.	6
Pleasant St. @ Langley Parkway	6
Loudon Rd. @ N. Main St.	6
Total City-Wide Reportable MV Accidents	1,327

Source: Concord Police Department, November 2010

**where there was injury or over \$1,000 combined property damage*

MAPS OF ASSET AND RISK IDENTIFICATION

Since the City of Concord is geographically large and is the location for so many assets, there are seven maps displaying asset and risk identification. Each map of the *Map 3A* through *Map 3G* series displays where any asset or facility exists.

Map 3A displays Concord's critical facilities, including Essential City Facilities, Essential Government Facilities, Transportation Facilities, Medical Facilities, Communications Facilities, and Utilities. *Map 3B* displays the City's infrastructure, including Water Supplies, Dams, and bridges, both state and town owned. *Map 3C* displays the Vulnerable Populations, Multi-Unit Housing (condos and apartment complexes), Child Care Facilities, Manufactured Housing Parks, Schools, and Congregate Care and Institutional Facilities. *Map 3D* displays Concord's economic assets, including Economic Areas (areas of dense commercial or industrial activity), and Economic Assets, which are individual businesses. *Map 3E* displays Public Gathering Sites, including Schools (which were also listed under the Vulnerable Populations map), Recreation, Churches, and other Gathering Places. *Map 3F* displays Historic Resources, including sites and areas of historical significance, as well as cemeteries. The final map, *Map 3G*, displays Hazardous Materials Facilities, which is loosely defined as any facility that harbors with hazardous materials and/or presents a potential hazard. Included on this map are several utilities, gas stations, oil & fuel companies, wastewater treatment plants, and other hazardous businesses.

Each facility on this map series is referenced by a keyed and numbered legend on its respective map. There are **827** sites identified in Concord, all of which also appear within the tables of **CHAPTER 3. ASSET AND RISK IDENTIFICATION**.

CHAPTER 4. POTENTIAL LOSSES

2011 PLAN UPDATE

As five years have elapsed since the first writing of this Plan, assessing data has changed and therefore building values have changed. Not only are the average and total home and non-residential building values in the Special Flood Hazard Areas (floodplains) modified within this Chapter, damages ranges for other natural hazards have been revised. Potential dollar damages resulting from natural hazards as identified in **CHAPTER 2. HAZARD IDENTIFICATION** were updated.

INTRODUCTION

The City of Concord has been impacted by natural disasters, including wind events, severe winter storms and ice storms, and to a lesser degree, human and technological hazards as documented in **CHAPTER 2. HAZARD IDENTIFICATION**. This Chapter identifies areas in City that are most vulnerable to these events and estimates their potential loss. It is difficult to ascertain the amount of damage caused by a hazard because the damage will depend on the hazard's extent and severity, making each hazard event somewhat unique. Human and technological hazards are typically even more incalculable. Human loss of life was not included in the potential loss estimates for natural hazards, but could be expected to occur, depending on the severity of the hazard.

Losses are generally grouped into people (death and injury), assets (structures and their contents), and functions (provisions of services and generation of revenue). The City of Concord has been impacted in the past by natural disasters, including: flooding, hurricanes, river ice jams, severe winter storms and thunderstorms. This Chapter identifies the areas in the City that are most vulnerable to these events and estimates their potential loss.

It is difficult to quantify the amount of damage caused by natural hazards because the sustained damage depends entirely upon the extent and severity of the hazard as well as the value of the asset potentially lost. Each hazard event is unique and the value of people, assets and functions vary greatly. Because technological and human hazards occur less frequently and are so unpredictable, it is exceedingly more difficult to estimate the losses sustained from these types of hazards. On the other hand, the most calculable loss is building damage because historically the damage inflicted upon buildings from varying hazards has been comparable. This Chapter utilizes building damage as an indicator for typical loss. Loss of human life was not included in the potential loss estimates but could be expected to occur depending on the severity of the hazard. It is important to note that these numbers are estimates only and have not been field verified.

LOSS ESTIMATION

Estimating losses from a natural disaster is difficult and often inaccurate. Estimating losses from technological and human-induced hazards is even more difficult because technological hazards are less predictable than natural hazards and human behavior is almost completely unpredictable. What type of hazard will impact what portions of Concord, the nature of the damage and how hard the hazard will impact people, infrastructure, critical facilities and other assets is beyond most scientific measures. While this Plan focuses on being pro-active in those geographic areas of Concord most prone to recurring hazards (like flooding), some initial estimates of measurable property damage and building damage have been discussed by utilizing simple techniques such as the numbers of structures and assessed valuation. This two-dimensional approach of calculating dollar losses from tangible structures offers a basic yet insightful tool to begin further loss estimation analyses.

For gauging more three-dimensional estimation of damages, FEMA has developed a software program entitled HAZUS-MH (for multi-hazard), which is a powerful risk assessment software program for analyzing potential losses from floods, hurricane winds and earthquakes. In HAZUS-MH, current scientific and engineering knowledge is coupled with the latest Geographic Information Systems (GIS) technology to produce estimates of hazard related damage before or after a disaster occurs. HAZUS-MH takes into account various impacts of a hazard event such as:

- Physical damage: damage to residential and commercial buildings, schools, critical facilities, and infrastructure;
- Economic loss: lost jobs, business interruptions, repair and reconstruction costs; and
- Social impacts: impacts to people, including requirements for shelters and medical aid.

Federal, State and local government agencies and the private sector can order HAZUS-MH free-of-charge from the FEMA Distribution Center. The Concord Fire Department has placed an order to receive the software to use in estimating losses for the community on a disaster-specific basis.

In the sections on technological hazards and human-induced hazards that follow, there is a description of a methodology adapted from a 2002 FEMA report titled: Integrating Human-Caused Hazards Into Mitigation Planning. The report aims to address the growing threat of terrorism following 9/11, however, it suggests an approach that is relevant to this hazard mitigation plan. Chapter 2 of this report focuses on risk assessment and estimation of potential losses. Where possible, the content of this chapter has been referenced in order to better develop a practical approach to estimating losses resulting from technological and human hazards.

LOSSES BY FLOODING

Flooding is often associated with hurricanes, ice-jams, rapid snowmelt in the spring, and heavy rains. Concord is bisected by the Merrimack River and is bounded on the southeast by the Soucook River, and the Contoocook River traverses from the Merrimack River west to the Hopkinton town line. Despite their smaller sizes, the Turkey River, Turkey Ponds, and other streams can cause extreme damage when they flood.

The floodplain data used in this analysis was delineated by City staff using elevation from two-foot contour lines, benchmarks, and aerial photography to determine a good estimate of the boundaries of the 100-year floodplain. The City's digital floodplain information in the GIS was developed using two methods: one for the assumed floodplains and one for the detailed floodplains. The City's Digital floodplain information is not official and does not replace either official map (FEMA or Army Corps) for determining the regulatory boundaries of the floodplain. It is a far more accurate representation of the floodplain, however, than either of the City's official maps. Areas of improvement include the assumed floodplains along the Turkey River and the smaller streams and brooks where flood elevations have not been provided by FEMA. They also include the area to the north of the Sewalls Falls Dam along the Merrimack River where the differences between the Corps and the FEMA Maps are severe and the CORP elevations were modified in the GIS layer to reflect the breach of the Sewalls Falls Dam. Developing a digital version of the FEMA Maps was not feasible since the floodplain became a problem, as it was missing open water and covering hillsides. The City adopted the new FEMA 4/19/10 Floodplain Maps.

The following disclaimers mark the digital floodplain data as utilized in the Maps and as the analysis for potential losses:

The Flood Hazard Information included in this Geodatabase is intended for general planning purposes and is not intend to replace, supercede, supplement or replace the "FIRM - Flood Insurance Rate Map" and "Corps of Engineers Maps" for zoning, insurance, or other regulatory purposes.

This digital floodplain information provided by the City was used in the calculations for this section. Floodplains are found along the major, more populated areas of the Merrimack, Contoocook, and Soucook Rivers, as well as along less populated areas surrounding the Turkey River, Turkey Pond, Little Turkey Pond, Burnham Brook, Hayward Brook, Snow's Brook, Hackett Brook, Hoit Road Marsh, Mill Brook, Bela Brook and Turree Brook.

In Concord in 2010, 240 parcels have buildings (sometimes more than one building) which are located in one of the floodplains. Of these parcels:

- 49 contain single family homes and two family homes
- 6 contain multi-family homes
- 87 contain manufactured homes
- 98 contain retail, commercial, offices or institutional buildings
- 0 contain manufacturing or industrial buildings.

The type and value of the buildings in the floodplain was determined by performing geographic information system (GIS) calculations on the December 2010 digital property tax database, the floodplains, and the tax parcels. The building value represents the value of all buildings on a parcel in the floodplain.

Table 11
Building Value in the Floodplain

Building Type	Numbers of Parcels with Buildings in Floodplain	Total Value of Buildings	Average Replacement Value	Average Value Per Type
Single Family Homes	49	\$6,396,000	\$130,531	\$194,245
Multi-family Homes	6	\$2,578,100	\$429,683	
Manufactured Homes	87	\$1,959,300	\$22,521	
Retail/ Commercial/ Non-Profit / Governmental	98	\$34,571,600	\$352,771	\$352,771
Manufacturing/Industrial	0	\$0	\$0	\$0
Total	240	\$45,505,000	\$187,101	-----

*Sources: Concord Property Tax Database, December 2010;
Concord Digital Tax Parcels; City of Concord Digital Floodplain data*

In **Table 11**, total building value in the floodplain is **\$45,505,000**. There are a total of **240** parcels in Concord's floodplains with buildings on them. Land value was not considered. There are **49** parcels with single family homes, **87** parcels with manufactured homes, six (**6**) parcels with multi-family homes, and **98** parcels with non-residential buildings approximated to be situated within or immediately adjacent to the floodplain, totaling **240** parcels with primary buildings. The average replacement value is **\$194,245** for a single-family home, the building only. All together, the replacement value of the primary buildings in the floodplain totals **\$45,505,000**.

The total number of all parcels with buildings on them in the City is **13,343**, while **240** parcels have buildings in the floodplain. The resulting percentage of City parcels with buildings on them in the Special Flood Hazard Areas is **1.8%**. With the total building value for the City at **\$3,694,893,500**, with **\$45,505,000** of that value within the floodplain, **1.2%** of the City's building value is located within the floodplain.

Potential Losses Calculations for Flooding

In the following calculations, the average replacement value was calculated by adding up the assessed values of all structures in the floodplains and then dividing by the number of structures. The Federal Emergency Management Agency (FEMA) has developed a process to calculate potential loss for structures during flooding events. The potential loss dollar figure was calculated by multiplying the average replacement value by the percent of damage expected from the hazard event, and then by multiplying that figure by the number of structures.

The costs for repairing or replacing infrastructure such bridges, railroads, power lines, telephone lines, natural gas pipelines, and land value, outbuilding value, and the contents of structures have not been included in these estimates in the following tables.

The types of buildings of the *Occupancy Class* for [Table 11A](#), [Table 11B](#), [Table 11C](#) following are defined as such, as indicated from the Property Tax Database under the field LU_DESC:

- Residential = manufactured, single family, two family, multi family, campground, condominium, apartment building
- Retail/Commercial/Non-Profit/Government = retail, wholesale, professional, services, financial, entertainment, schools, recreation, churches, City, State, Federal & County , institutional
- Industry = heavy, light, technology, sand and gravel, warehouses, airport

There a total of **13,343** parcels with buildings in Concord, with an assessed valuation of all residential, commercial, and industrial structures of **\$3,694,893,500** in December 2010.

Table 11A
Dollar Damage Ranges for Total Buildings in the Floodplain

Occupancy Class	Total Value of Buildings	Total Buildings Damaged in Potential Floodplain by Respective Building Type		
		Eight-Foot Flood 49% damage	Four-Foot Flood 28% Damage	Two-Foot Flood 20% Damage
Single Family Homes	\$6,396,000	\$3,134,040	\$1,790,880	\$1,279,200
Multi-Family Homes	\$2,578,100	\$1,263,269	\$721,868	\$515,620
Manufactured Homes	\$1,959,300	\$960,057	\$548,604	\$391,860
Retail/ Commercial/ Offices/ Institutional	\$34,571,600	\$16,940,084	\$9,680,048	\$6,914,320
Manufacturing/Industrial	\$0	\$0	\$0	\$0

Source: FEMA publication *Understanding Your Risks*, page 3-10; [Table 11](#)

Because most of the buildings in the floodplain have been elevated above the eight foot rise, there will be few flooding incidents at this height.

In **Table 1A**, damage to buildings in the Special Flood Hazard Areas, referred to as the floodplain in this table, are categorized by the building type and the amount of damage sustained. If all single family homes were damaged by an eight foot flood, up to **\$3,134,040** in damages to the structure would be sustained. If non-residential buildings were damaged by a two-foot flood, up to **\$6,914,320** would be sustained. Damages ranges help the City's hazard mitigation planners and administrative staff plan for the worst case scenario.

Building and Contents Replacement Values

Not only is the building value to be considered when calculating losses, but also the contents' value can be roughly calculated. The dollar values for different categories of buildings follows in **Table 11B** for the floodplain and **Table 11C** for the entire City, including the Special Flood Hazard Areas.

Table 11B
Building and Contents Replacement Value in the Floodplain

Occupancy Class	Contents Value %	Numbers of Parcels with Buildings in Floodplain	Average Building Value in the Floodplain	Contents Replacement for Buildings in Floodplain
Residential	50%	142	\$194,245	\$13,791,386
Per Building				\$97,122
Retail/ Commercial/ Non-Profit / Governmental	100%	98	\$352,771	\$34,571,600
Per Building				\$352,771
Manufacturing/ Industrial	150%	0	\$0	\$0
Per Building				\$0
Total	---	240	\$273,508	\$224,947

Source: FEMA publication *Understanding Your Risks*, page 3-10; **Table 11**

Table 11B illustrates the potential dollar damages to not only the structure value but also for contents replacement for those buildings within the Special Flood Hazard Areas. Residential contents value for buildings in the floodplain is 50% of the building value and average **\$97,122** per home in addition to the structure value of **\$194,245**. Retail and commercial buildings have a 100% contents value, with an average content replacement value of **\$352,771**. Industrial buildings have a 150% contents replacement value, but there are none identified in the floodplain.

Table 11C represents average building and replacement value of all buildings in the City. There are **11,425** residential parcels with buildings in Concord, totaling **\$1.75 billion**, with an average replacement value of **\$153,376** and contents value of **\$76,688** per home. Retail and commercial account for **1,773** parcels, **\$1.89 billion** in value, and an average replacement and contents value of **\$1,064,318**. Manufacturing accounts for far less, with only **145** parcels with buildings, having an average **\$382,975** in value and **\$574,463** in contents replacement value.

Table 11C
Building and Contents Replacement Value in the City

Occupancy Class	Contents Value %	Numbers of Parcels with Buildings	Total Value of Buildings in the City	Average Building Value in the City	Contents Replacement for All Buildings
Residential	50%	11,425	\$1,752,326,400	\$153,376	\$876,163,200
Per Building					\$76,688
Retail/ Commercial/ Non-Profit / Governmental	100%	1,773	\$1,887,035,700	\$1,064,318	\$1,887,035,700
Per Building					\$1,064,318
Manufacturing/ Industrial	150%	145	\$55,531,400	\$382,975	\$83,297,100
Per Building					\$574,463
Total		13,343	\$3,694,893,500	\$320,134	-----

Source: FEMA publication *Understanding Your Risks*, page 3-10; **Table 11**

Flood hazards are the predominant hazard in Concord, other than severe winter weather, and are the most predictable in terms of where damage will occur. Some damage may be avoidable. This is why the City has placed such an emphasis on flooding and examining the potential losses of the natural hazard, particularly since the losses can be estimated based upon the assessing data by *Occupancy Class*.

LOSSES BY OTHER NATURAL HAZARDS

Building and content damage by natural disasters in New Hampshire is not limited to flooding alone, which is easier to quantify and predict. Simple calculations can be made based upon generalizations of a disaster impacting a certain percentage of the number of buildings in the City. The assessed value of all residential, commercial, and industrial structures in Concord is **\$3,694,893,500**. The total number of parcels with buildings is **13,343**.

The percentage of potential damage from any type of natural hazard is displayed below in **Table 11D**. The lower percentages are used in the following potential losses descriptions for the other natural hazards discussed in this document. The higher percentages, 10% to 50%, are displayed for illustration purposes. If a hazard impacted **0.5%** of residential buildings in the City, the estimated contents and building damage could total **\$15.3 million**, or **\$142 million** for commercial buildings. If a hazard struck that impacted **1%** of buildings in Concord, **\$30.7 million** in residential damage could occur, and **\$284 million** in commercial damage and **\$127.8 million** in industrial damage could occur.

Table 11D
Potential Damage Scenarios of Building and Contents Value in the City

Percentage of Potential Damage	Number of Parcels in City	100% Residential Building and Contents Damage	100% Commercial etc. Building and Contents Damage	100% Industrial Building and Contents Damage
0.5%	67	\$15,348,769	\$142,011,942	\$63,875,472
1%	133	\$30,697,538	\$284,023,884	\$127,750,943
5%	667	\$153,487,688	\$1,420,119,422	\$638,754,716
10%	1,334	\$306,975,376	\$2,840,238,843	\$1,277,509,431
25%	3,336	\$767,438,441	\$7,100,597,108	\$3,193,773,578
Total	13,343	-----	-----	-----

Sources: Calculations from **Table 11C**

Specific sites in Concord which are most vulnerable to each of these hazards are listed in **Table 4** through **Table 9** in **CHAPTER 3. ASSET AND RISK IDENTIFICATION**, and many are described in **CHAPTER 2. HAZARD IDENTIFICATION**.

Damage to infrastructure (such as dams, streets, highways, cable, telephone, fiber optic, communications, public property, etc) other than bridges has not been estimated due to a lack of a methodology.

Hurricane and Severe Storms

Damage caused by hurricanes can be both severe and expensive. In the past, most notably in 1938, Concord has been impacted by wind and flooding damage as a result of hurricanes. Recent wind events have created damage similar to hurricanes.

Assuming Citywide damage to be between 0.5% (67) and 1% (133) of all parcels with buildings, a hurricane or severe storm could result in between **\$15.3 million to \$30.7 million** in residential building and content damage, or **\$142 million to \$284 million** in commercial/governmental building and content damage, or **\$63.9 million to \$127.8 million** in industrial building and content damage, or result in damage to any combination of building types. Refer to [Table 11A](#), [Table 11B](#), [Table 11C](#), and [Table 11D](#) for more information.

Rapid Snow Pack Melt

Flooding caused by rapid snow pack melt is often found along roadways and from waterbodies such as rivers and streams. Those areas which are particularly susceptible would be the floodplain and along highways, but anywhere where the water cannot yet percolate into the frozen ground could be vulnerable. The City identified areas of past and potential flooding events on *Map 1. Potential Hazards*.

Assuming Citywide damage to be between 0.5% (67) and 1% (133) of all parcels with buildings, a hurricane or severe storm could result in between **\$15.3 million to \$30.7 million** in residential building and content damage, **\$142 million to \$284 million** in commercial/governmental building and content damage, **\$63.9 million to \$127.8 million** in industrial building and content damage, or result in damage to any combination of building types. Refer to [Table 11A](#), [Table 11B](#), [Table 11C](#), and [Table 11D](#) for more information.

River Ice Jams

The Merrimack River, Contoocook River, Soucook River, and Turkey River are the major flowing waterbodies in the City. All flow under the key bridges which are identified in [Table 4F](#) and [Table 10A](#). The 2009-2012 Statewide Transportation Improvement Program (STIP) provides many examples of basic cost estimates bridge replacement and rehabilitation. Ranges can run from about \$750,000 (Epsom) for a small local bridge replacement to over \$5,000,000 (Dover) or more for a large bridge over a railroad. The average of this range is \$2,875,000.

If two (2) bridges needed to be replaced in Concord as a result of the physical damage caused by river ice jams, the cost could be **\$5,750,000**.

In addition, if 10% of the parcels with buildings on them in the floodplain (24) were damaged, it could result in **\$4.5 million** in building damage alone.

Dam Breach and Failure

There are currently **42** active dams in Concord in the 2009 New Hampshire Dam database maintained by the Department of Environmental Services Dam Bureau. According to RSA 482:2 II, a dam is any artificial barrier which impounds or diverts water, has a height of four feet or more or has a storage capacity of two acre-feet or more, or is located at the outlet of a great pond. Inactive dams are defined as dams that do not meet the legal definition of a dam. There are 29 inactive/unclassified dams listed in Concord that do not meet the above definition and may be in ruins, breached, removed, or never built.

Concord has one **(1)** High (H) Hazard Dam, which means that there is a high probability of damage to life and property should the dam fail:

- 051.13 Penacook Lake Dam on Rattlesnake Brook

Concord has three **(3)** Significant (S) Hazard dams, which means a significant probability of damage to life and property should the dam fail:

- 051.02 York Dam on the Contoocook River
- 051.06 Penacook Upper Falls Dam on the Contoocook River
- 051.25 Turkey Pond Dam on the Turkey River

The City has six **(6)** Low (L) Hazard dams, which means a low probability of damage to life and property should the dam fail:

- 051.12 Lower St. Pauls School Pond Dam on Turkey River
- 051.21 Turtle Pond Dam on tributary of Mill Brook
- 051.28 Hoit Road Marsh Dam on tributary of Hackett Brook
- 051.43 Allied Leather Forebay on Rolfe Canal
- 051.46 Briar Hydro Penstock Intake on Rolfe Canal
- 051.62 Sheep Davis Road Dam

The remaining dams in the City are classified as Non-Menace (NM), which means negligible or no probability of damage to life and property should the dam fail.

The amount of dollar damage in the event of a dam breach will vary according to the extent and severity of the breach. The City identified areas of past and potential dam breach events on *Map 1. Potential Hazards*.

Stream Bank Erosion and Scouring

The Merrimack River, Contoocook River, Soucook River, and Turkey River are the major waterbodies in the City and would likely be prone to erosion at some locations. The amount of damage to buildings would be difficult to measure, if 10% of the parcels with buildings on them in the floodplain **(24)** were damaged, it could result in **\$4.5 million** in building damage alone.

Debris Impacted Infrastructure

The Merrimack River, Contoocook River, Soucook River, and Turkey River are the major flowing waterbodies in the City. All flow under the key bridges which are identified in [Table 4F](#) and [Table 10A](#). The 2009-2012 Statewide Transportation Improvement Program (STIP) provides many examples of basic cost estimates bridge replacement and rehabilitation. Ranges can run from about \$750,000 (Epsom) for a small local bridge replacement to over \$5,000,000 (Dover) or more for a large bridge over a railroad. The average of this range is \$2,875,000.

If two (2) bridges needed to be replaced in Concord as a result of the physical damage caused by river ice jams, the cost could be **\$5,750,000**.

Tornadoes

Tornadoes are relatively uncommon natural hazards in the State. On average, about six touch down each year. However, damage largely depends on where a tornado strikes. If it strikes an inhabited area, the impacts could be severe. In the State of New Hampshire, the total cost of tornadoes between 1950 and 1995 was \$9,071,389 (*The Disaster Center*). The cost of a tornado in Concord would not be Citywide because tornadoes strike in smaller areas. Dollar amounts would depend on whether the tornado hit an area with a high density of buildings.

If a tornado impacted 0.5% of the City's parcels with buildings on them **(67)**, it could result in **\$15.3 million** in residential building and content damage, or **\$142 million** in commercial/ governmental building and content damage, or **\$63.9 million** in industrial building and content damage, or result in damage to any combination of building types. Refer to [Table 11A](#), [Table 11B](#), [Table 11C](#), and [Table 11D](#) for more information.

Downbursts and High Winds

Damage caused by downbursts and high winds would not be Citywide because they typically strike in smaller areas. Few places in Concord are at specific risk (see **CHAPTER 2. HAZARD IDENTIFICATION** and **CHAPTER 3. ASSET AND RISK IDENTIFICATION**). Dollar amounts would depend on if the hazard hit an area with a high density of buildings. The City identified areas of past and potential wind events on *Map 1. Potential Hazards*.

If a downburst or high wind event impacted 0.5% of the City's parcels with buildings on them **(67)**, it could result in **\$15.3 million** in residential building and content damage, or **\$142 million** in commercial/ governmental building and content damage, or **\$63.9 million** in industrial building and content damage, or result in damage to any combination of building types. Refer to [Table 11A](#), [Table 11B](#), [Table 11C](#), and [Table 11D](#) for more information.

Lightning

Damage caused by lightning would not be Citywide because it typically strikes in smaller areas. Few places in Concord are at specific risk (see **CHAPTER 2. HAZARD IDENTIFICATION** and **CHAPTER 3. ASSET AND RISK IDENTIFICATION**). Dollar amounts would depend on if the hazard hit an area with a high density of buildings.

If lightning impacted 0.5% of the City's parcels with buildings on them (67), it could result in **\$15.3 million** in residential building and content damage, or **\$142 million** in commercial/governmental building and content damage, or **\$63.9 million** in industrial building and content damage, or result in damage to any combination of building types. Refer to **Table 11A**, **Table 11B**, **Table 11C**, and **Table 11D** for more information.

Wildfire

The risk of fire is difficult to predict based on location. Forest fires are more likely to occur during years of drought. In addition, areas and structures that are surrounded by dry vegetation that has not been suitably cleared are at high risk. However, fire danger is generally universal and can occur practically at any time. Dollar damage would depend on the extent of the fire, the number and type of buildings burned, and the amount of contents destroyed within the buildings. The City identified areas of past and potential wildfire events on **Map 1. Potential Hazards**.

If wildfire impacted 0.5% of the City's parcels with buildings on them (67), it could result in **\$15.3 million** in residential building and content damage, or **\$142 million** in commercial/governmental building and content damage, or **\$63.9 million** in industrial building and content damage, or result in damage to any combination of building types. Refer to **Table 11A**, **Table 11B**, **Table 11C**, and **Table 11D** for more information.

Severe Winter Weather

Heavy snowstorms typically occur during January and February. New England usually experiences at least one or two Nor'easters with varying degrees of severity each year. Power outages, extreme cold, and impacts to infrastructure are all effects of winter storms that have been felt in Concord in the past. All of these impacts are a risk to the community, including isolation, especially of the elderly, and increased traffic accidents. Damage caused as a result of this type of hazard varies according to wind velocity, snow accumulation, and duration. The City identified areas of past and potential ice and snow events on **Map 1. Potential Hazards**.

Assuming Citywide damage to between 0.5% (67) and 1% (133) of all parcels with buildings, a hurricane or severe storm could result in between **\$15.3 million** to **\$30.7 million** in residential building and content damage, or **\$142 million** to **\$284 million** in commercial/governmental building and content damage, or **\$63.9 million** to **\$127.8 million** in industrial building and content damage, or result in damage to any combination of building types. Refer to **Table 11A**, **Table 11B**, **Table 11C**, and **Table 11D** for more information.

Earthquake

Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric, and phone lines and are often associated with landslides and flash floods. Four earthquakes in New Hampshire between 1924-1989 had a magnitude of 4.2 or more. Two of these occurred in Ossipee, one west of Laconia, and one near the Quebec border. A more recent earthquake had its epicenter in Boscawen, adjacent to Concord, in 2010.

Seismic lines are indicated on *Map 1: Potential Hazards*. If an earthquake were to impact Concord, underground lines would be susceptible. In addition, buildings that are not built to a high seismic design level would be susceptible to structural damage.

Assuming Citywide damage to between 0.5% (67) and 1% (133) of all parcels with buildings, a hurricane or severe storm could result in between \$15.3 million to \$30.7 million in residential building and content damage, or \$142 million to \$284 million in commercial/governmental building and content damage, or \$63.9 million to \$127.8 million in industrial building and content damage, or result in damage to any combination of building types. Refer to Table 11A, Table 11B, Table 11C, and Table 11D for more information.

Landslide

Damage caused by landslides would be concentrated in those areas along embankments, either along the highways or hillsides. Few places in Concord are at specific risk (see CHAPTER 2. HAZARD IDENTIFICATION and CHAPTER 3. ASSET AND RISK IDENTIFICATION). Dollar amounts would depend on if the hazard hit an area with a high density of buildings. Steep slopes greater than 25% were identified on *Map 1. Potential Hazards*.

If a 0.5% of the City's parcels with buildings on them (67), it could result in \$15.3 million in residential building and content damage, or \$142 million in commercial/ governmental building and content damage, or \$63.9 million in industrial building and content damage, or result in damage to any combination of building types. Refer to Table 11A, Table 11B, Table 11C, and Table 11D for more information.

Drought

Drought is often declared on region-wide basis, and sometimes by individual town. Damage caused by drought would be difficult to quantify, but would most likely impact the agricultural-economic base of a community. Although everyone would be charged to conserve water, orchards, farms, and nurseries would be most affected. Drought could affect the City's water supplies.

As physical damage is usually isolated to specific locations, the effects of potential disasters at certain facilities could be researched utilizing the City Assessor's database for valuation on targeted land.

Radon

As radon may not be noticed by the general public without education and testing, it is difficult to estimate any potential damages. The majority of the City is connected to the public water system. Airborne radon seeping out of basements and through water vapor can be mitigated by individual property owners at an average of \$1,200 for a radon reduction system (per Environmental Protection Agency) to treat the air inside a home.

If 20% (2,669 parcels with buildings) of the City installed radon reduction systems, \$3.2 million would be spent.

Biological

Biological hazards affect the ecosystem, humans, and wildlife. As such, a dollar value cannot be placed upon these resources. However, the population of the City at 42,695 per the 2010 US Census is living within close quarters, and the social, economic, and employment opportunities are a natural draw from all over the region. The Capital Area Public Health Network's Public Health Improvement Plan should be consulted for further information on the vulnerability of the City. The Center for Disease Control, CDC, is a very good source of information on biological hazards and their detrimental effects.

LOSSES BY TECHNOLOGICAL HAZARDS

Concord, like other growing cities, increasingly relies on technology to perform every day tasks more efficiently. A breakdown of this system has immeasurable damaging effects. Loss of business, productivity, routine and an impact to public health has negative consequences to individuals, families, and businesses alike. Human hazards are similar to technological hazards because they are both somewhat human-induced. Technology is designed by humans and humans are frequently partly responsible for technological disasters (transportation accidents, air pollution, strikes, financial collapse, etc.). Much of what follows in the sections on technological and human hazards is applicable to both categories. **CHAPTER 3. ASSET AND RISK IDENTIFICATION** identifies sites that are vulnerable to the technological disasters highlighted below, and **Table 3A** lists the annual events that occur within the City.

Physical minor technological disasters such as traffic accidents are common in Concord and will continue to occur. The potential physical and human loss depends on the severity of the accident, the value of the vehicles involved and other factors such as the safety of the vehicles involved and the number of occupants in the vehicle. Because of the complex factors that determine the severity of traffic accidents, it is difficult to estimate the losses associated with them. Losses associated with larger events such as explosions and building collapses also cannot be easily measured because the loss depends on numerous unpredictable factors, such as: emergency response time, structural integrity, weather, geographic location, chemicals present at the accident site, occupants in the building or area, etc.

FEMA uses a methodology for integrating technological hazards into disaster mitigation planning. This methodology reinforces the importance of analyzing the vulnerability of assets and the hazards that threaten them. The methodology promotes the following steps prior to estimating losses: Identify Hazards, Profile Hazard Events, Inventory the Assets. These steps will heretofore be frequently referred to as steps 1, 2 and 3. This plan does not attempt to carry out the loss estimation for every asset in Concord based on the vulnerability of all assets and the severity of the hazards. What ensues, however, is an explanation of the steps used to arrive at an estimation of losses so that those responsible for mitigating hazards at specific locations within the City may best do so. Numerous hazards have been identified below and where possible, resources containing further practical information for completing the three steps mentioned above have been included. The hazards have already been identified in Chapter 2. The criteria for consideration for the second step, Hazard Profile, is as follows:

- *Application mode*: Describes the action (s) necessary to cause the hazard to occur.
- *Duration*: Length of time the hazard is present on the target. For example, length of time a hazardous material spill may affect an area.
- *Dynamic / static characteristic of a hazard*: Describes the tendency of the hazard to expand, contract, or remain confined in time, magnitude and space.
- *Mitigating conditions*: Characteristics of the target or its physical environment that can reduce the effects of the hazard. For instance, preventive measures are mitigating conditions when dealing with hazardous material spills.
- *Exacerbating conditions*: Characteristics that can enhance or magnify the effects of a hazard. For example, the wood in a structure may be an exacerbating condition in the case of a fire rather than a mitigating condition.

The third step used in estimating potential losses is the Inventory of Assets or the assessment of the vulnerability of the assets. By assessing the vulnerability it becomes easier to estimate the losses. Vulnerabilities can either be inherent or tactical. Inherent vulnerabilities exist independent of any protective or preventive measures applied to the asset. Inherent vulnerabilities to consider include:

- *Visibility*: Is the public aware of the target, facility, site, system or location?
- *Utility*: What is the value of the target, facility, site, system or location?
- *Accessibility*: Is the target, facility, site, system or location accessible to the public?
- *Asset mobility*: Is the target or asset mobile or is it fixed?
- *Presence of hazardous materials*: Are hazardous materials present at the target or asset?
- *Potential for collateral damage*: What are potential consequences for neighbors and surrounding area?
- *Occupancy*: What is the potential for loss of human life based on number of people present at the target or affected area?

Tactical vulnerability refers to the security, design and other mitigation tools used to protect a place. These measures can include site planning and landscape design, parking security, structural, electrical and fire protection engineering, architectural and interior space planning and electronic and organized security. These factors are included because when estimating potential asset losses it is necessary to first assess the vulnerability of the asset to particular threats. For example, the potential loss a structure could sustain as a result of a technological hazard will be higher if there are no preventive measures implemented in the building's design and construction.

Because there is no formula or system for estimating potential losses by technological and human-induced hazards, a thorough inventory of assets, profile of hazards and inventory vulnerability assessment are imperative. With that established, it should be noted that the damage of technological hazards can be great to physical structures, ecosystems, computer systems, utilities and communications. Humans rely on the proper functioning of technology for their well-being and any loss or interruption to this technology could be economically debilitating. However, the most valuable asset that could be at risk of a technological hazard is human life. Hazardous materials spills, explosions, fires, transportation accidents, building and structure collapse, radiological accidents and extreme air pollution all threaten the fragile human life.

Concord's permanent population base of **42,695** per the 2010 US Census, in addition to temporary and transient populations, is vulnerable to technological hazards, including the following hazards in this section.

Hazardous Materials

Damage to structures is often isolated at one or two locations, so the effects of potential disasters at certain facilities could be researched utilizing the City Assessor's database for valuation on specific buildings. In order to best estimate the potential losses in the case of a hazardous materials spill or contamination, one must research the hazardous waste events that could potentially occur in the City. This step has been referred to above as 'profiling' the hazard. A good source of information on different types of hazardous wastes and the consequences of their spillage is the U.S. Government's Environmental Protection Agency website: www.epa.gov. The National Response Center maintains an updated list of hazardous materials incidents that were responded to on their website: www.nrc.uscg.mil/incident_type_2000up.html.

In 2009 there were a total of 31,886 incidents responded to within the U.S. and its territories. The second factor in estimating the potential losses in the case of a hazardous waste incident is assessing the vulnerability of the asset or target in question. The City must assess all those locations, including buildings, roads, rail corridors, rivers, lakes, streams, etc., that could be potential targets of a hazardous waste spill or contamination. When assessing the vulnerability of any site it is necessary to consider all the criteria explained above.

Explosion/Fire

Damage to structures is often isolated at one or two locations, so the effects of potential disasters at certain facilities could be researched utilizing the City Assessor's database for valuation on specific buildings. FEMA reports that fire annually costs the U.S. over \$10 billion in damage, causes 5,000 deaths and 30,000 injuries. They also report that in a typical year, home appliance and wiring problems account for 93,500 fires, 550 deaths and \$760 million in property damage. Fire is a costly hazard that causes both property damage and physical harm or death.

A good source of information on fires and fire damage is the National Fire Protection Agency. The NFPA updates a website regularly: www.nfpa.org. The website contains extensive information on different types of fires and explosions. It should be referred to when doing research on the Hazard Profile. When doing the Inventory of Assets, all of the above criteria should be considered because fires and explosions have the potential to affect many structures differently depending on the structure's engineering and fire preventive measures. Explosions and fires also have the potential to cause physical harm and death and because of this they should be treated as very threatening hazards.

Transportation Accident

As discussed in the introduction to **LOSSES BY TECHNOLOGICAL HAZARDS**, the most common transportation accidents are vehicular. The same criteria for estimating potential losses resulting from the other technological hazards can be applied to transportation accidents. The City can estimate the potential losses of different transportation accidents that may occur at different locations throughout the City by profiling past accidents and by assessing the vulnerability of property and human life involved. Within Pittsfield and the region, accidents of other nature have occurred, such as airplane crashes. One good source of information on all things pertaining to motor vehicle accidents is the National Highway Traffic Safety Administration.

On their website, www.nhtsa.dot.gov, information on things such as crash tests and rollover ratings to an analysis of speeding-related fatal traffic crashes is included. This source will be useful when profiling the hazard. When assessing the vulnerability of assets, everything from high accident locations, frequency of accidents, time of accidents, weather, road conditions, vehicle type, the number of occupants and the driver should be considered in addition to the Step 3 criteria mentioned above.

Transportation accidents could occur anywhere in Concord, but the greatest losses are likely to be sustained on Interstates 89, 93 and 393, and Routes 106, Route 4/202, and Route 4.

Building/Structure Collapse

Damage to structures is often isolated at one or two locations, so the effects of potential disasters at certain facilities could be researched utilizing the City Assessor's database for valuation on specific buildings. In profiling the building/structure collapse hazard, one should consider that buildings and structures frequently collapse because of some other hazard, such as fire, wind, flood, etc. An assessment of the vulnerability must include all the criteria mentioned above. Because firefighters and construction workers are a vulnerable population in the case of building and structure collapse, researching occupational safety is advisable in order to complete Steps 2 and 3. The Center for Disease Control website, www.cdc.gov, has a link to the Electronic Library of Construction Occupational Safety and Health. This Electronic Library has relevant articles on the effects of building/structure collapse and the vulnerability of workers who often are required to work in unsafe conditions.

Concord had numerous building collapses in the winter of 2010. By being aware of this hazard occurring during extreme weather conditions, City staff can work to ensure that future structure collapses are minimal or that occupants are unharmed. Like other technological hazards, building collapses are difficult to measure in terms of dollar losses since they are singular and building-specific.

Power/Utility Failure

The incapacity or destruction of the energy and utility systems in Concord and the region would have a debilitating effect on the physical and economic security of the City, the public health and the general well-being of the City's residents. Power failure is a common occurrence when many natural hazards cause damage to critical infrastructure. The potential vulnerability of power/utility infrastructure should be assessed, in the case that damage is inflicted by another hazard on this infrastructure.

Because PSNH and Unitil are the major electric power providers to the City of Concord, they are the best source of information on this particular hazard. Power and utility failure is similar to communications system failure because any interruption of service can cause lost revenues for businesses, interrupted service from organizations or agencies and even failure of emergency services by those who provide them. These consequences must be considered when estimating the losses incurred from power or utility failure.

Concord has a good relationship with Unitil, who participated in the Task Force meetings to update this Plan.

Extreme Air Pollution

Extreme air pollution is a hazard that can adversely affect public health and productivity. On days when the air quality is very poor, an extra effort is required of emergency personnel. The best source of information on air pollution is the New Hampshire Department of Environmental Services. When estimating the losses resulting from extreme air pollution, it is necessary to first profile the hazard and assess the vulnerability of those assets most threatened. The general public is most at risk during poor air quality days, and within the general public, certain groups of people are more at risk than others. Worker productivity is decreased on poor air quality days and more work is required of emergency personnel. Energy output is higher on these days as well, for many people require air conditioners and fans to remain cool.

Radiological Accident

A radiological accident has the potential of causing widespread human loss of life, asset damage and environmental destruction. Cleanup of radiological accidents is painstaking. When assessing the potential losses in the case of a radiological accident, it is important to consider the potential loss of human life and the subsequent long-term loss of the utility of lands and buildings in the area contaminated by the accident. The two nuclear power plants that were highlighted above have 10-mile Emergency Planning Zones around them. Neither Concord nor any town in the region is located within the EPZ of Seabrook Station. Nevertheless, contamination is possible at least 50 miles from the site of a radiological accident. A recommended source of information on all things related to radiological accidents and nuclear power is the United States Environmental Protection Agency.

Fuel/Resource Shortage

Fuel or resource shortage is a hazard that has the potential to cause an economic crisis. Most recently, New Hampshire residents witnessed the effects of the fuel shortage resulting from the aftermath of Hurricane Katrina. The price of gasoline increased for several weeks until finally stabilizing. Because fuel supply is fickle, it is nearly impossible to predict the occurrence of a shortage. Nearly everyone is vulnerable to the effects of fuel shortage, from consumers to businesses. A few of the many sources on energy and the potential for fuel or resource shortages can be found on the websites of the U.S. Department of Energy, Environmental Protection Agency and the Federal Energy Regulatory Commission.

Strike

Strikes are a hazard capable of interrupting services provided by businesses, government, schools, hospitals and organizations. Strikes tend to cause economic loss rather than asset loss or loss of human life. When estimating the potential loss caused by a strike, it is important to do a profile of typical area strikes and to assess the services that could be disrupted. Estimation of losses should be directed at those potential targets of strikes and the assets related to those targets.

Business Interruption

Of the technological hazards, estimating potential losses resulting from business interruption may be the easiest. Typically, the only asset threatened by business interruption is economic. Business owners have a good idea of their daily, weekly, monthly and yearly revenue. By estimating lost revenue over any period of time, a business owner can calculate his or her losses. Without complicating the estimation too much, business owners should undergo Steps 1, 2 and 3 when estimating potential business interruption losses. The reason is that businesses may be interrupted for any number of reasons and it is important to attempt to predict how each hazard could affect business. For example, a flooded basement resulting from a severe hurricane could cause a debilitating short-term interruption but would not cause as long a business interruption as a fire that causes complete building collapse.

The City has numerous businesses that, if disrupted, would cause not only local economic loss, but would cause a ripple effect across the region. Goods, services, and employment would be affected.

Financial Issues, Economic Depression, Inflation, Financial System Collapse

These hazards can threaten individuals, families, states and even the entire nation. It is difficult, at best, to foresee the occurrence of a hazard of this type. Nevertheless, it is recommended that a profile of the hazard and an assessment of the vulnerability of the assets inventoried be carried out. Not all assets are equally vulnerable to these hazards. As history has shown, such things as demographics and geography can make one population more vulnerable than another. It is also important to remember that these hazards frequently affect certain industries more than others. Financial collapse in the manufacturing sector may affect one geographic area or the entire nation, but the high tech sector may experience growth during the same period. Because of the complexity of this hazard, when estimating losses it is critical to follow Steps 1, 2 and 3 for all potential assets.

Communications Systems Interruptions

Communications systems interruptions can be detrimental to a business or other organization that relies on communications systems in order to conduct business. Often, communications systems interruptions or failures result in a business interruption. Therefore, the same criteria explained in the above section on Business Interruption may be applied to communication systems interruptions as well. In the case of an emergency, or during another hazard event, individuals and government agencies rely on communications for safety. If these systems were interrupted during another event, people would be at risk.

Refer to **CHAPTER 3. ASSET AND RISK IDENTIFICATION** for vulnerability of specific sites to these hazards.

LOSSES BY HUMAN HAZARDS

As Concord is a city of 42,695 people per the 2010 US Census, a high rate of casualty could result in the event of a human disaster event at a major employer, a public gathering place, a school, a hospital, or during special events. CHAPTER 3. ASSET AND RISK IDENTIFICATION identifies sites that are vulnerable to human disasters, and Table 3A lists the annual events that occur within the City.

Damage to structures is usually isolated to one or two locations, so the effects of potential disasters at certain facilities could be researched utilizing the City Assessor's database for valuation on specific buildings.

The same methodology that was explained in the previous section should be applied to human hazards when estimating losses. Human and technological hazards are more similar to each other than either is to natural hazards because they both result from human behavior or failure of human-created systems. The profile of human hazards and the vulnerability of assets from human-induced hazards are distinct from those of technological hazards because they are even harder to measure. It should be assumed, in all cases, that any hazard event will cause a worst-case scenario. As in the previous section on technological hazards, when possible, sources of further information have been referenced in order to strengthen the research for steps 2 and 3. An additional tool that FEMA recommends is the creation of a Facility Inherent Vulnerability Matrix. This tool can be used to compare the relative vulnerability of each asset based on the criteria that is used for Step 2. The x-axis should contain vulnerability point values, ranging from low to high (0 for absolutely no vulnerability to 5 for high vulnerability), and the y-axis should contain the criteria: asset visibility, target utility, asset accessibility, asset mobility, presence of hazardous materials, collateral damage potential and site population/ capacity (incrementally increasing from 0 to >5000). Because each quadrant of the matrix contains a point value, the vulnerability of each asset can be calculated by selecting the appropriate point value.

The guidelines for estimating potential losses given above and in the previous section on Technological Hazards are only suggestions. However, because there is no straightforward methodology for calculating potential losses due to technological and human-induced hazards, the most thorough evaluation of assets, hazards and asset vulnerability provides the best means for estimating losses and mitigating disasters.

General Strike

Structural damage as well as disruption of services and revenue can occur. Most likely to occur as a result of general strike is a disruption of services, as strikes are most frequently aimed at providers of services such as government, schools, hospitals and corporations.

Terrorism

Acts of terrorism vary greatly from act to act but recent terrorist events have been targeted at humans. Terrorist acts that cause human casualties have drawn more attention to terrorists and their agendas. For example, the diffused Concord Library bomb incident had the potential to cause human casualties and major property damage. There are different acts of terrorism and each has the potential to cause damage, however, the nature of the damage depends on the act of terrorism. Eco-terrorism typically targets businesses and government facilities, political terrorism may target a landmark or government office and biological terrorism may target large groups of people. In order to estimate potential losses from acts of terrorism, each type should be considered different. In other words, the vulnerability of the potential targets should be assessed depending on the different types of acts of terrorism. The U.S. Department of Homeland Security should be the primary source of information on terrorism.

Sabotage

Sabotage, like terrorism, has the potential to damage more than simply infrastructure or property. It is unknown how sabotage has the potential to cause human casualties, however, it can cause business interruption, humiliation and defamation of character, financial collapse and economic catastrophe. Businesses, organizations, government agencies, schools, individuals and anyone who could be at risk of sabotage should address their security and assess their vulnerability to the hazard. Especially vulnerable to sabotage are organizations in the industries of information and telecommunications, physical distribution, energy, banking & finance and vital human services.

Hostage Situation

Hostage situations vary in time and damage. Because hostage situations involve humans, the potential for casualties is greater in hostage situations than in other human hazards such as sabotage, general strike and civil unrest. The procedure for profiling the hazard should be done as for the other human hazards, but when assessing the vulnerability of the asset it must be remembered that it is human life.

Civil Disturbance / Public Unrest

Structural damage as well as disruption of services and revenue can occur. Typically, acts of strike and general strike are more passive than civil disturbance and public unrest. The latter are more likely to result in asset loss.

Enemy Attack

Damage to structures is often isolated at one or two locations, so the effects of potential disasters at certain facilities could be researched utilizing the City Assessor's database for valuation on specific buildings. Vulnerable targets are typically those that are the most visible and utile to the general public because enemies, like terrorists, seek those locations that offer the greatest potential for exhibition.

Arson

Damage to structures is often isolated at one or two locations, so the effects of potential disasters at certain facilities could be researched utilizing the City Assessor's database for valuation on specific buildings. According to a 1998 FEMA/USFA report, arson is the leading cause of fire and direct financial loss resulting from fire. It accounts for 30% of both. For further details refer to the above reference to Explosion/Fire in the Technological Hazards section.

Mass Hysteria

This condition can result at locations where large groups of people congregate in likely response to a primary hazard event. It is unknown how to calculate the potential losses resulting from an event of mass hysteria. Structural damage as well as disruption of services and revenue can occur in addition to bodily harm.

Special Events

The special events in Concord and the area have been listed [Table 3](#) and [Table 3A](#). Special events are unique because they are not inherently a hazard, like the natural, technological and other human hazards. In very rare cases, special events locations are the site of some property loss, injury and death in extreme cases. While researching special events in the region, no cases of death were discovered. Nevertheless, the potential exists.

Because each special event is different, varying in place, time, number of people, etc., the vulnerability of the assets and potential for losses will vary. Different events draw different crowds to different venues. A thousand people at a St. Paul's graduation ceremony will create a smaller hazard than a thousand people at a rock concert in downtown Concord.

MAPS OF POTENTIAL HAZARDS AND LOSSES

Since the City of Concord is geographically large and is the location for so many assets, there are seven maps displaying asset and risk identification in relation to the identified hazards impacting Concord. Each map has areas of specific hazards shown in a specific color or other pattern for identification. Areas susceptible to wildfire are shown as red cross-hatching. Areas in the approximate floodplain are shown as orange crosshatch, detailed floodplains are illustrated as blue crosshatch, and flooding due to hurricane is shown as a blue/white pattern. Areas susceptible to dam breaches are shown as black diagonal stripes. There are three radon areas, high (light red), medium (lavender), and low (yellow). Note that the aforementioned hazards do not have any solid boundaries, and the marked boundaries on the maps are only approximated locations of those areas most likely to be affected by those hazards.

Each map of the *Map 4A* through *Map 4G* series displays where any asset or facility exists in relation to nearby potential hazards. *Map 4A* displays Concord's critical facilities, including Essential City Facilities, Essential Government Facilities, Transportation Facilities, Medical Facilities, Communications Facilities, and Utilities. *Map 4B* displays the City's infrastructure, including Water Supplies, Dams, and bridges, both state and town owned. *Map 4C* displays the Vulnerable Populations, Multi-Unit Housing (condos and apartment complexes), Child Care Facilities, Public Assistance Facilities, Manufactured Housing Parks, Schools, and Congregate Care and Institutional Facilities. *Map 4D* displays Concord's economic assets, including Economic Areas (areas of dense commercial or industrial activity), and Economic Assets, which are individual businesses. *Map 4E* displays Public Gathering Sites, including Schools (which were also listed under the Vulnerable Populations map), Recreation, Churches, and other Gathering Places. *Map 4F* displays Historic Resources, including sites and areas of historical significance, as well as cemeteries. The final map, *Map 4G*, displays Hazardous Materials Facilities, which is loosely defined as any facility that harbors with hazardous materials and/or presents a potential hazard. Included on this map are several utilities, gas stations, oil & fuel companies, wastewater treatment plants, and other hazardous businesses.

Each facility on this map series is referenced by a keyed and numbered legend on its respective map. There are **827** sites identified in Concord, all of which also appear within the tables of **CHAPTER 3. ASSET AND RISK IDENTIFICATION**.

CHAPTER 5. DEVELOPMENT TRENDS

2011 PLAN UPDATE

It has been five years since the last Plan was written, and the social and physical landscape of Concord has changed. The most recent demographic data, including US Census 2010 population and housing data, has been used in this Chapter to portray the population, housing, and overall demographic picture of present day Concord. The new 2030 Master Plan was reviewed and recommendations relating to reducing hazard risk were displayed in this Chapter. A revised section on [Relation to Natural Hazards](#) helps to portray how the community's most vulnerable or critical geographic areas could be affected by predominant natural, human, and technological hazard events.

INTRODUCTION

A brief description of how the City's population and housing growth within the last three decades follows. Depicting the trends of land development, land use in acres for 2010 was taken directly from the new Master Plan for the City. Viewing the vulnerable areas in the City and which hazards might affect them permits a portrayal of hazard risk in certain geographic sections of Concord. Examination of this information will allow emergency management officials to better understand the trends within its borders and how emergency and preventative services can best serve the growing and changing population and landscape.

POPULATION AND HOUSING GROWTH

Concord developed a new Master Plan in 2008, which is available on the City's website at www.onconcord.com. Chapters include Land Use, Housing, Economic Development, Conservation and Open Space, Historic Resources, Recreation, and Implementation. To be developed are Community Facilities and Public Utilities. Supporting maps include Existing Land Use, Future Land Use, Opportunity Corridor, Southern Opportunity Corridor, Sidewalk Plan, Bicycle Plan, Future Open Space, Park and Recreation, Wetlands, and Trails.

The Master Plan will help guide development and preservation efforts through 2030. Population and housing will continue to increase in the City, and the Master Plan prioritizes areas to encourage growth and areas to retain as protected from development.

Trends in both population and housing have been tracked utilizing the best available data as displayed in the following tables. These will have a tremendous impact on the City in the coming years as population and housing begin to compete for open space. Technological and human hazards will become more prevalent, and as population fills additional area, natural hazards could have a greater effect on lives and property.

Table 12**Overall Population and Housing Growth Trends in Concord, 1970-2010**

Growth	Population	Net Change		Housing Units	Net Change	
		#	%		#	%
1970 Census	30,002	0	0	9,547	0	0
1980 Census	30,400	398	1.3%	12,126	2,579	27.0%
1990 Census	36,006	5,606	18.4%	15,697	3,571	29.4%
2000 Census	40,687	4,681	13.0%	16,881	1,184	7.5%
2010 Census	42,695	2,008	4.9%	18,852	1,971	11.7%
Total Change from 1970 - 2010	---	12,693	42.3%	---	9,305	97.5%

Sources: 1970-1990 US Census CPH-2-31 Table 9 Population and Housing Unit Counts; US Census 2000 & 2010 Data *includes all housing units, including vacant and seasonal

In **Table 12**, from 2000 to 2010, an additional **2,008** people became Concord residents, a **4.9%** increase. In the previous decade from 1990 to 2000, the increase was **4,681** residents, or a **13%** increase. Housing between 2000 and 2010 increased by **1,971** units, or **11.7%**, whereas the previous decade saw a smaller increase of **1,184**, or **7.5%**. In 2010, there was an average of **2.3** people in each housing unit, down **0.8** from **3.1** in 1970.

Table 12A**Population Density in Concord, 1970-2010**

Area in Square Miles (excluding water)	Persons per square mile				
	1970	1980	1990	2000	2010
63.95	469.1	475.4	563.0	636.2	667.6

Sources: 2000 New Hampshire OSP Total Land Area Figures for New Hampshire Cities and Towns; **Table 12**

The City of Concord is a large geographic area of nearly 64 square miles. As displayed in **Table 12A**, in 2010 Concord had a population density of **668** people per square mile. Over the last 40 years the number of persons per square mile in the community, known as the population density, has grown by **42%**, or **198** people per square mile. From 2000 to 2010, an additional **31** people per square mile lived in Concord, an increase of **4.9%**. Although the actual density population numbers are high, in comparison to the smaller surrounding communities the growth rate percentage is low, with most neighboring towns tripling their density.

Table 12B
New Construction and Demolition Permits Issued by Building Type, 2003-2010

Building Type	2003	2004	2005	2006	2007	2008	2009	2010	8-Year Total
Multi-Unit Homes	120	0	0	54	71	60	0	45	350
Attached Single Family Homes	37	55	24	46	28	0	12	33	235
Detached Single Family Homes	114	138	84	64	55	25	25	20	525
Duplex Homes	4	0	16	0	8	126	0	2	156
Mobile Homes	0	0	0	0	0	0	0	0	0
Conversions	2	-6	-2	-11	6	11	-3	-3	-6
Demolished Homes	-16	-7	-8	-6	-7	-11	-5	-10	-70
Retail/ Commercial/ Non-Profit / Governmental	7	9	11	4	20	11	5	6	73
Manufacturing/Industrial	0	0	1	0	2	0	0	0	3
Total Permits Issued	268	189	126	151	183	222	34	93	1,266

Source: Housing Starts 1960-2019 File, from building permit data, provided 07/29/11; Tracking Software for non-residential development

In **Table 12B**, an eight-year trend of new building and demolition permits is displayed. The highest number of overall new construction permits was issued in 2003 (**268**) and 2008 (**122**), and the lowest number of new construction permits was issued in 2009 (**34**) and 2010 (**93**). Over the eight -year time period between 2003 and 2010, a total of **1,266** new construction permits were issued.

The **1,266** permits issued included **535** single family detached permits, **350** multi-unit permits, and **235** attached single family permits. Demolition permits were included, with a high of **16** demolitions in 2003 and a low of **5** demolitions in 2009, with a total of **70** demolished buildings over the time span. No (**0**) mobile, or manufactured, home permits were issued. Only three (**3**) manufacturing/industrial permits were issued in eight years, one (**1**) in 2005 and two (**2**) in 2007.

LAND USE

According to the NH Office of Energy and Planning, through geographic information system (GIS) calculations, Concord has a total land area of 40,933.93 acres or 63.95 square miles. Another 2,065.85 acres (3.22 square miles) is water. The total area of Concord is 42,999.79 acres or 67.12 square miles. According to the City of Concord land use data calculations from the 2008 Master Plan, there are **43,136** acres, a difference of 137 acres. Concord has the largest acreage of all municipalities in Merrimack County.

1993 Projected Land Use Map

According to the 1993 land use map, the City of Concord devised nine categories for Land Use in the year 2010. Land Use is classified as either rural/open space, suburban, urban/mixed use, institutional, residential/office/institutional, commercial, industrial/commercial service, urban reserve, and parks/schools/recreation sites. The predominant amount of rural and open space can be found on the western and eastern borders of the city lines and on both banks of the Merrimack and Contoocook Rivers. Urban Reserve land is located near the Merrimack River. Industrial/Commercial Service is found to the southwest and northeast of the Merrimack. There is a heavy concentration of Suburban use to the east of I-93. Commercial use can be found near roads, especially to the west of I-93. The other land uses, such as parks, schools and recreation sites and residential/offices/institutional land uses are scattered about the City.

2005 Land Use

The Land Use Chapter of the Master was adopted in 2008 and refined the draft current land use data from mid-2004 that was used in the previous 2005 Hazard Mitigation Plan. This is the most recent land use data available. The 2005 categories are different than the projected land uses of 1993, so a direct comparison cannot be made.

Table 12C displays the percentage of land use for each of the categories for the 2005 land use data. Water acreage is included in the calculations of overall **43,136** acres in the City. The largest amount of land use area in the City is Vacant/Undeveloped at over **48%** of the City's acreage, followed by Single Family Dwelling (**25%**) and Road and Highway ROWs (**6%**). Agricultural constituted **5%**, Multi-Family Dwellings **2%**, Commercial/Service **2%**, and Mobile Homes was less than **1%** of the total area. Water accounted for over **5%** of the total area of Concord, the fourth-highest acreage of land use categories.

Table 12C
Land Use in Concord, 2005

Land Use	Acres	% of City*
Vacant/Undeveloped	19,804.44	48.58%
Single Family Dwelling	10,139.39	24.87%
Road and Highway ROWs	2,595.11	6.37%
Water	2,368.00	5.49%
Agriculture	1,990.96	4.88%
Institutional	1,116.10	2.74%
Multi-family Dwelling	789.40	1.94%
Parks and Recreation	770.27	1.89%
Commercial/Service	720.36	1.77%
Industrial	606.29	1.49%
Two Family Dwelling	421.17	1.03%
Transportation	325.25	0.79%
Mobile Homes	321.55	0.79%
Excavation	291.91	0.71%
Offices	261.84	0.64%
Utilities	236.10	0.58%
Cemeteries	130.07	0.32%
Mixed Use (Res/Comm)	108.00	0.26%
Medical	106.63	0.26%
Parking	33.16	0.08%
Total	43,136.00	105.48%

Source: City of Concord Master Plan 2008, Land Use Chapter

Master Plan 2030

The Master Plan 2030 was prepared by the Concord Planning Board and adopted in December 2008. The Plan contains sections on the required Vision and Land Use elements, and also contains sections on Housing, Economic Development, Conservation and Open Space, Historic Resources, Recreation, and Implementation. The Community Facilities and Public Utilities sections are forthcoming.

The Master Plan divides the City into different districts: Penacook Village, West Concord, East Concord Village, Concord Heights, Downtown Concord/Opportunity Corridor, North/West End, and the South End. Each has its own unique attributes which contributes to the diversity of the City. A series of Maps illustrates the key features in the community.

One of the vision statements for Concord is:

- “Concord’s natural resources are appropriately protected, and natural hazards are identified and addressed.”

The residents of Concord had opportunities to participate in the Master Plan’s development. A community survey was mailed and public meetings were held. A series of recommendations were the result of the Master Plan’s data collection and analysis. Land use policies to limit the risk of natural, technological, and human hazards include:

- “Revise and amend existing development regulations to protect the health and safety of residents; to manage nuisances; and to protect against hazards to life and property from natural and man-made disasters.”
- “Maintain and enforce land use regulatory provisions which prohibit new residential development in the floodplains and floodways, on steep erodible slopes, shorelands, or wetlands, and to cooperate with State and federal regulatory agencies to protect residential areas from exposure to risk from toxic, explosive or other hazardous materials.”
- “Floodplain:
 - Use the best available information to establish the regulatory flood elevations and limits of flood hazard areas and to continue participation in the Federal Flood Insurance Program.
 - Continue to restrict development in the floodplain outside of existing urbanized areas to agricultural and recreational uses.
 - Prohibit new residential uses within the floodplain and encourage the removal of existing residences.”

There is a clear tie between the Master Plan and this Hazard Mitigation Plan. Protection of the water resources, including wetlands and floodplains, is critical, and these resources were identified as having potential to cause flooding. Stormwater management in the form of low impact design for drainage facilities was identified to mitigate hazards from flooding and stormwater runoff. Several Actions relating to stormwater management improvements are located in **CHAPTER 10. EVALUATION AND IMPLEMENTATION OF ACTIONS.**

RELATION TO NATURAL AND NON-NATURAL HAZARDS

The locations of where people are concentrated or where new lands may be developed should be compared to the area of potential natural hazards. These location comparisons will enable careful planning to help alleviate potential dangers to the existing concentrations and encourages mitigation planning during the early development stages of new construction.

Areas of High Density

Of major concern are those areas of the City that contain a high number of people, vehicles, and structures. Some of the most concentrated areas will be examined to determine their relation to natural hazards.

Main Street and Downtown Concord

Main Street in downtown Concord is the main street through the most concentrated area of Concord. There are many commercial, residential, and state government buildings located in the downtown area. The downtown area would be susceptible to all hazards, including wind, snow and ice, human, technological, and fire. Main Street serves as a crucial secondary evacuation route, and it normally carries a relatively high volume of traffic.

Residential Areas Surrounding Downtown and the Opportunity Corridor

In the surrounding Downtown proper, high-density residential mixed and mixed use areas as well as redevelopment occurring in the Opportunity Corridor to the east of Main Street exists as an area of high density in downtown Concord.

Loudon Road and Concord Heights

Concord Heights is a second area of high density, located in the area surrounding Loudon Road (Route 9). This is an area of a high concentration of commercial businesses, State offices, restaurants, employment centers, and shopping, as well as residential homes and multi-unit housing. Loudon Road is laden with heavy traffic. As a result, accidents are frequent on the stretch of Loudon Road from the intersection with Hazen Drive and Airport Road northeast to the area near Wal-Mart. Loudon Road is considered a secondary evacuation route. Some areas on the outside edges of Concord Heights may be at risk for wildfires. Since Loudon Road ascends a hill before Hazen Drive and Airport Road, flooding is not a particular concern. All other hazards should be considered.

Route 3 and Penacook

Penacook, a village located in the northern-most portion of Concord to the west of the Merrimack River and I-93, is the third area in Concord with high density. Most of Penacook is not in any specific hazard area, although a small part of the northern part of Penacook is in the vicinity of the Contoocook River and has dealt with flooding problems in the past. Like any areas of high density, Penacook would be particularly vulnerable to all hazards, including wind, snow and ice, human, technological, and fire events. Village Street (Route 3), the major road in the village which serves as a secondary evacuation route, additionally runs the risk of traffic congestion and accidents.

For all areas of high density, pre-planning should be undertaken to ensure the orderly evacuation and to help avoid traffic congestion if a disaster were to occur.

Vulnerable Populations

Certain population groups are at a higher risk of exposure to or impact from natural and human hazards. These particularly vulnerable populations will be examined in the context of their geographic location and their likelihood of sustaining damage to certain disaster types.

Schools and Child Care Facilities

Schools are located in [Table 5](#). Over twenty public and private schools are situated in Concord, ranging from preschools to colleges. For kindergarten through high school, mass transportation of children versus the sheltering of children at the school should be factors to consider when developing an evacuation plan. Any hazard could befall schools, but they are perhaps most vulnerable to human hazards.

Two schools, the NH Police Academy and New Hampshire Technical Institute, are located within the 100-year floodplain of the Merrimack River. The NH Fire Academy falls inside the 100-year floodplain of the Soucook River.

Because of its prominence, University of New Hampshire Law Center is likely to be at risk from human hazards. The Law Center draws many people from a diverse number of ethnic backgrounds. Since the incidents on September 11th, any institution such as UNHLC could be at risk from terrorists. Situated in a residential neighborhood next to the largest City Park, civilian casualties could be high if a human disaster were to occur at UNHLC.

Over 30 child care facilities are identified in [Table 5D](#). They are situated throughout Concord and several are located within other significant sites, such as at Concord Hospital, NH Odd Fellow's Home, NH Technical College, and the YMCA. Special considerations of child care facilities during or following a disaster include an influx of parents trying to pick up their children, the adult-child ratio, and perhaps the lack of disaster safety training of daycare workers.

Multi-Unit Housing

As indicated in [Table 5A](#), there are nearly 50 apartment complexes and multi-unit housing units (such as condominiums) identified in Concord. All complexes, like manufactured housing parks, run the risk of being impacted by disasters because even if they do not lie in a hazard area, unpredictable and extremely localized hazards such as tornadoes, microbursts, and lightning could cause extensive damage and/or loss of life due to the density of population.

There are about 12 multi-unit housing complexes in the Penacook and West Concord villages, and none are in any specific hazard areas. There are five complexes located in the area of Manchester Street and Airport Road, and although none are in defined hazard areas, they are close to the boundary of the wildfire hazard areas. Approximately 13 complexes exist in the Concord Heights/Loudon Road area. None are in any hazard areas but some are located close to wildfire hazard areas. One complex, South Concord Meadows, is located in the South Concord and is not nearby to any hazard areas. In the event of a disaster, plans should be made to quickly and efficiently evacuate these areas via the evacuation routes.

There is a multi-unit apartment building on Route 3/North State Street near Knight Street that was damaged in the 2006 flooding and is still located in a high-hazard area. This building was a mill conversion, and Rattlesnake Brook flows right next to the building.

Kennedy Apartments is located on Thompson Street. The Crutchfield Apartments are also located on Montgomery Street. Both are Section 8 Housing operated by Concord Housing Authority. The building stands eight stories tall and is the tallest residential structure in Concord. Fire in the building is a primary concern due to the difficulty in Fire Department accessibility. Special planning must be undertaken to ensure efficient evacuation in the event of an emergency.

Manufactured Housing

There were nine manufactured housing parks identified in [Table 5B](#). Manufactured housing parks are at particular risk because the areas are densely populated, there are few access roads, and the structures are not as stable as buildings set on foundations. Even if a hazard event was very localized, it could cause extensive damage and/or loss of life in manufactured housing parks. Manufactured housing parks in Concord are vulnerable to all hazards, including wind, wildfire, flooding due to rain storms, human hazards, and ice and snow even if they are not located in a specific hazard area.

Foxcroft Estates and Green Meadows Manufactured Home Park are located in West Concord (to the south of Penacook), and are not in or near any specific hazard areas. Alosa's Mobile Homes and Crestwood Estates are not in any specific hazard risk areas, but the borders to both wildfire and flooding areas are quite close to each. Riverview Landing and Valley Stream Estates Inc. are both located close to the Merrimack River, and both lie well within the 100-year floodplain and within the City's regulated flood plain. Green Acres Mobile Home Park, along the Merrimack intervale, has flooded in the past. If heavy rain, rapid snow melting, or ice jams caused the Merrimack River to overflow its banks, these parks could be inundated. Concord Terrace and Princess Mobile Homes in Penacook are susceptible to all hazards. All nine major parks, whether in defined hazard areas or not, lie in close proximity to, and in many cases are connected to, primary or secondary evacuation routes.

Alosa's parks are located at 69 Manchester Street; Park Plaza is at 83-87 Manchester Street, Hilltop is at 190 Manchester Street, and Hillcrest is at 192 Manchester Street. The 155 Manchester Street facility is a mixed commercial/residential building where the Alosa office is located. All of these parks, except for Hillcrest at 192 Manchester Street and its office, are somewhat remote from flood zones and are probably a minimum of 70' - 80' above the City's regulatory flood elevations.

Senior Housing

As listed in [Table 3C](#), there are several senior housing facilities throughout Concord. Five of them, Endicott Hotel (Main Street), Boucher Apartments (Center Street in Penacook), Harris Hill Nursing Home (Maitland Street), Havenwood-Heritage Heights (Christian Avenue), and are not in the Merrimack River 100-year floodplain but are within the City's regulated flood plain. As Havenwood and Heritage Heights sit over 100 feet vertically above the river, The Endicott some 25 feet above the outer limit of the floodplain, and Boucher and Harris Hill Nursing Homes are both vertically and horizontally separate from the flood hazard areas, flooding should not be an issue for these facilities.

Horseshoe Pond Place, however, on Commercial Street, lies within the 100-year floodplain of the Merrimack River. The physical limitations of the elderly will require higher levels of assistance in the event of a disaster. All of the residents live on the upper floors above the ground floor, above the flooding hazard.

Riverside Development

Since the largest river in New Hampshire bisects Concord and runs close to many developed areas, flooding from the Merrimack River is always a concern. The Wastewater Treatment Plant, located to the south of Riverview Landing, is well within the 100-year floodplain of the Merrimack River and could easily be flooded. Two previously mentioned manufactured housing parks, Riverview Landing and Valley Stream Estates Inc. (Green Acres), lie very close to the river and adjacent to the 100-year floodplain but within the City's regulated flood plain.

New Hampshire Technical Institute is located adjacent to the 100-year floodplain but within the City's regulated flood plain of the Merrimack, and the college has plans of continued growth. Any new buildings constructed on the campus could be inundated in the event that the Merrimack River overflows its banks. The flooding risk cannot be avoided unless the new buildings were built on higher ground at a significant distance from the rest of the campus.

In Penacook, there are several old buildings nearby the Contoocook River. Although the buildings are not in the floodplain, they do lie along the Contoocook River, and in some circumstances flooding, such as through dam breach, may be a legitimate concern. Some of the buildings are actually in Boscawen, but they run the same risk as those in Concord.

The Penacook Wastewater Treatment Plant is also in the floodplain.

Interstates I-93 and I-393

Interstates I-93 and I-393 are susceptible to natural hazards as well as human hazards. Because I-93 is the major corridor that is used by traffic traveling through Concord from north to south, impediments could paralyze traffic flow in and out of the City. I-393 serves as the main corridor for traffic east/westbound east of I-93. A section of I-93 between Exit 13 and Exit 14 is susceptible to flooding. This section is in the FEMA 500-year floodplain and the City's 100-year floodplain.

Since these interstate highways are flat, wide and are constructed higher than the surrounding ground, wind is always a hazard for traffic, as well as snow and ice. The wide-open corridors allow wind to move relatively unrestricted, and as a result it can reach higher speeds than it normally would in more forested areas. In areas where highways rise well above the landscape, crosswinds can be dangerous. These winds are especially dangerous to taller vehicles such as vans and semis, and can cause falling snow to drift, reducing visibility and causing snowdrifts. Human and technological hazards, such as vehicle accidents, chemical spills or bridge failure, can also reduce the free-flow nature of interstate highways.

One area of dense commercial concentration is the east end of Loudon Road, where the Steeplegate Mall is located. There are several dozen retail stores inside the mall, and surrounding the mall are many other high-volume businesses. During the holiday season, there may be tens of thousands of shoppers in this area as shown on [Table 3A](#). Some of these businesses also can contain hazardous materials. The majority of Loudon Road residents and shoppers will evacuate via I-393, which at the junction of Route 106 also serves as the single evacuation point for those coming from Loudon and Pembroke. It is imperative that I-393 and its two bridges remain unimpeded during a disaster event so a safe evacuation can occur.

Possible Future Development

As of late 2010, there were thirteen planned new development projects in Concord, over half of which are residential. The locations of future development, from [Table 9](#), will be susceptible to any number of hazards, ranging from specific areas of identified hazards to those which could occur at any locality to those that are specific to the site of new construction.

Housing Developments

There are three large housing developments that will be built in the Penacook/West Concord area, The Vineyards on Bog Road (124 units), Sandwood Crossing on Borough Road (102 units), and Oxbow Bluff on Manor Road (66 units). They are all partially complete as of August 2011. These developments would not be in any immediate hazard area, although portions of Borough Road may be susceptible to flooding of the Contoocook River, and extreme western Bog Road may also be at risk of flooding. A third housing development, Whispering Pines located on Curtisville Road (90 units), is not in an immediate hazard area; however, the area for risk of wildfire is nearby on both sides of the road. Abbott Village is a senior housing development (85 units) that will be located across from Swenson Granite Co. on Route 3 in close proximity to, but some 70 feet above, the floodplain area.

A new building of multi-family 45-units housing (Mennino Place) on Storrs Street by Concord Area Trust for Community Housing (CATCH) will be vulnerable in the congested conflagration

area which is in downtown Concord. Glen Ellen on Hoit Road (35 units) is in a remote area of Concord, prone to wild fires.

Commercial and Industrial Developments

One commercial project is intended to locate in the Heights vicinity. LAT Holdings is developing an office building on Break O'Day Drive. The primary concern for the project is wildfires, although most major projects are constructed with non-combustible exterior walls, have significant paved separation from natural vegetation, and have interior sprinkler protection, all in accordance with the non-residential building codes.

Two projects are locating to the downtown area. On South Main Street, the Duprey Center will be a multi-level office building constructed on a vacant lot. On Langdon Avenue, the industrial project Concord Steam Relocation will construct a woodchip-fired steam plant to replace their existing set-up which provides steam energy to downtown Concord. These projects are at risk of fires, explosions, and human hazards.

There are three other planned projects in Concord. At St. Paul's School complex, a Math and Science Building will be constructed. Extensive flooding occurred at this complex after the 2006 Plan was written, although the School has taken extensive measures to prevent a recurrence. The NH Co-op Recycling Facility, a single-stream recycling facility, will be built on Whitney Road off of Exit 17 at the Canterbury/Boscawen town line. Hazard concerns could be human hazards, hazardous materials, and explosions. Finally, the former Penacook Tannery site located on East Street in Penacook is to host a constructed mixed-use facility. It lies at the along the Contoocook River, and could be at risk of flooding through dam breach.

CHAPTER 6. FLOODPLAIN MANAGEMENT

2011 PLAN UPDATE

Concord has been exposed to several disaster events since the first writing of this Plan, including flooding, as documented in previous chapters. These events have resulted in Federal Disaster Declarations under the Robert T. Stafford Act for public and individual assistance. As a result of these events, the City has applied for and received hazard mitigation grant funds. Updates to this Chapter included reviewing each section and adding new information where relevant. Buildings within the Special Flood Hazard Area were identified, new washout flooding was discussed, a 2009 Community Assistance Visit (CAV) was reviewed, and updated statistics were available.

INTRODUCTION

Flood mitigation is an essential step in preventing flood damage. This section provides an overview of past and potential flooding risks in Concord and discusses Concord's participation in the National Flood Insurance Program.

Second only to winter storms, flooding is the most common natural disaster to impact New Hampshire. Floods are most likely to occur in the spring due to the increase in rainfall and melting of snow. However, they can occur anytime of year as a result of heavy rains, hurricane, or Nor'easter.

FLOODING IN CONCORD

The likelihood of flooding in Concord is **High**, according to **CHAPTER 2. HAZARD IDENTIFICATION**. The City is highly susceptible to flooding because of the close proximity of the population to the Merrimack, Contoocook, and Soucook Rivers. In addition, **55** single family and multi-family, **87** manufactured, and **98** commercial and industrial parcels with buildings were counted within the 100-year and 500-year floodplain, to total **240** parcels with buildings in the floodplain. This information is taken from **Table 11** in **CHAPTER 4. POTENTIAL LOSSES**. As the 2010 Census counted **18,852** housing units, it can be calculated that less than **1.0%** of housing units in Concord are situated in the floodplain.

The following areas or water bodies and roadways have flooded in the past and are likely to flood in the future. Some areas flooded due to inadequate storm drainage facilities:

- Merrimack River
- Soucook River
- Contoocook River
- Turkey River
- Turkey Pond
- Little Turkey Pond
- Burnham Brook
- Hayward Brook
- Snow's Brook
- Hackett Brook
- Hoit Road Marsh
- Mill Brook
- Turree Brook
- Bela Brook
- Bow Brook (May 2006)
- Millstream Brook (May 2006)
- Rattlesnake Brook (May 2006)
- Woods Brook (May 2006)
- Ash Brook (May 2006)
- River's edge at the former Christian Mutual Building
- Fort Eddy Road
- The NH Technical Institute fields
- Hall Street in the Amoskeag Beverages area
- Long Meadow Drive manufactured housing park
- St. Paul's School
- Iron Works Road
- School Street (Bow Brook 2006 Flood)
- Pleasant Street (Bow Brook 2006 Flood)
- Warren Street (Bow Brook 2006 Flood)
- North State Street (Rattlesnake Brook 2006 Flood)
- Elm Street (Contoocook River 2006 Flood washout)
- River Road
- Riverhill Road

Numerous past flood events have been recounted within **CHAPTER 2. HAZARD IDENTIFICATION**. Refer to **Table 19** in **CHAPTER 12. APPENDIX** for locations damaged by the May 2006 flooding event.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP)

In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer funded disaster relief for flood victims and the increasing amount of damage caused by floods. The Federal Insurance and Mitigation Administration (FIMA) a component of the Federal Emergency Management Agency (FEMA) manages the NFIP, and oversees the floodplain management and mapping components of the Program.

Communities participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes flood insurance available to homeowners, renters, and business owners in these communities. Flood insurance, Federal grants and loans, Federal disaster assistance, and Federal mortgage insurance is unavailable for the acquisition or construction of structures located in the floodplain shown on the NFIP maps for those communities that do not participate in the program.

To get secured financing to buy, build, or improve structures in Special Flood Hazard Areas, it is legally required by federal law to purchase flood insurance. Lending institutions that are federally regulated or federally insured must determine if the structure is located in a SFHA and must provide written notice requiring flood insurance. Flood insurance is available to any property owner located in a community participating in the NFIP.

Flood damage is reduced by nearly \$1 billion a year through partnerships with communities, the insurance industry, and the lending industry. Further, buildings constructed in compliance with NFIP building standards suffer approximately 80 percent less damage annually than those not built in compliance. Additionally, every \$3 paid in flood insurance claims saves \$1 in disaster assistance payments (www.fema.gov).

The NFIP is self-supporting for the average historical loss year, which means that operating expenses and flood insurance claims are not paid for by the taxpayer, but through premiums collected for flood insurance policies. The Program has borrowing authority from the U.S. Treasury for times when losses are heavy, however, these loans are paid back with interest.

Concord's NFIP Statistics

The latest Flood Insurance Study (FIP) was completed for Concord in August 1999, with the first in September 1979. Concord has been a participant in the National Flood Insurance Program since March 1980, when the maps were completed. The City adopted new Flood Insurance Rate Maps (FIRMs) effective April 19, 2010.

In **Table 13**, the number of policies in force has increased from **84** in January 2006 to **120** in March 2011, five years later. Since 1978, **\$232,736** in claims have been paid to owners under a total of **36** claims.

However, during the 2006 to 2010 five-year time period, **21** claims to FEMA were made totaling **\$219,736**. Within five years, these claims far exceeded the number of total losses claimed and losses paid over the prior thirty years.

Table 13
Concord Policy and Loss Statistics, 2006 and 2011

	Policies in Force	Insurance in Force	Number of Paid Losses (since 1978)	Total Losses Paid (since 1978)
January 2006	84	\$18,317,600	15	\$13,355
March 2011	120	\$27,718,400	36	\$232,736

Source: January 31, 2006 FEMA Policy and Claims databases

While the entire City of Concord is eligible to purchase flood insurance, only **120** property owners have done so. As described in **CHAPTER 4. POTENTIAL LOSSES**, a total of **240** parcels with buildings are situated in the Special Flood Hazard Areas.

REPETITIVE LOSS PROPERTIES

A specific target group of repetitive loss properties is identified and serviced separately from other NFIP policies by the Special Direct Facility (SDF). The target group includes every NFIP-insured property that, since 1978 and regardless of any change(s) of ownership during that period, has experienced four or more paid flood losses, two paid flood losses within a 10-year period that equal or exceed the current value of the insured property, or three or more paid losses that equal or exceed the current value of the insured property. The loss history includes all flood claims paid on an insured property, regardless of any changes of ownership, since the building's construction or back to 1978. Target group policies are afforded coverage, whether new or renewal, only through the SDF.

The FEMA Regional Office provides information about repetitive loss properties to state and local floodplain management officials. The FEMA Regional Office may also offer property owners building inspection and financial incentives for undertaking measures to mitigate future flood losses. These measures include elevating buildings above the level of the base flood, demolishing buildings, removing buildings from the flood area, and in some cases drainage improvement projects. If the property owners agree to mitigation measures, their property may be removed from the target list and would no longer be serviced by the SDF.

Concord's NFIP Repetitive Flooding Losses

As of October 2010, Concord had a total of three (3) repetitive loss properties according to records kept by the Federal Emergency Management Agency and supplied by the NH Office of Energy and Planning (NH OEP). These data records are confidential for the property -specific information they contain. Repetitive losses are determined by any repetitive damage claims on those properties that hold flood insurance through the NFIP.

Table 13A
Concord Repetitive Losses

Building Type	Total Losses Paid	Number of Repetitive Loss Properties
Single Family	\$38,104	2
Non-Residential	\$38,891	1
Total Paid	\$76,995	3

Source: FEMA, October 2010

As displayed in **Table 13A**, two (2) repetitive loss properties were single family buildings and one (1) repetitive loss was a non-residential building. The total of payments to these three properties was **\$76,995**. There have been a total of seven losses claimed to these three properties since 2004, when there had been no repetitive losses in Concord prior to 2004.

FLOODPLAIN MANAGEMENT AND REDUCING FLOOD RISKS

A major objective for floodplain management is to continue participation in the National Flood Insurance Program.

Communities that agree to manage Special Flood Hazard Areas shown on NFIP maps participate in the NFIP by adopting minimum standards. The minimum requirements are the adoption of the Floodplain Ordinance and Subdivision/Site Plan Review requirements for land designated as Special Flood Hazard Areas.

Federally subsidized flood insurance is available to any property owner located in a community participating in the NFIP. Communities that fail to comply with NFIP will be put on probation and/or suspended. Probation is a first warning where all policyholders receive a letter notifying them of a \$50 increase in their insurance. In the event of suspension, the policyholders lose their NFIP insurance and are left to purchase insurance in the private sector, which is of significantly higher cost. If a community is having difficulty complying with NFIP policies, FEMA is available to meet with staff and volunteers to work through the difficulties and clear up any confusion before placing the community on probation or suspension.

Ordinances and Community Assistance Visits in Concord

Since three rivers run through or adjacent to Concord, a high risk of future flooding is present. Several steps have been taken to help plan for the flooding hazard in terms of life and property protection, and possibly provide necessary recovery assistance should such a flooding threat arise.

Flood Insurance Study of Concord

The City's first adoption of flood zone management was based on a study of the Merrimack River from the Bow Townline to the Sewalls Falls Dam performed by the Army Corp of Engineers and was adopted in 1973 or 1974. The Federal Emergency Management Study (FEMA) and the Federal Insurance Administration (FIA) conducted additional flood insurance studies that were presented to the City of Concord in September of 1979 and in August of 1999. The goal and purpose of the studies were to examine the risks and relevance of flooding risks to Concord. The two FEMA studies examined the three major rivers in Concord, the Soucook, Contoocook, and Merrimack in terms of their history of flooding, geography of the areas along their banks, and seasonal changes. The 1999 FEMA study also included the Turkey River, Little Turkey Pond, Great Turkey Pond the Hoyt Road Marsh, plus Hayward, Hackett, Snow's and Mill Brooks. This latest study uses the compiled information and converts it into flood insurance criteria. FEMA and FIA also promote the local and state governments to adopt flood plain management programs (dams for flood controlling, etc.).

Most recently, the City adopted the 4/19/10 FIRMs.

According to NFIP policies, when an applicant files a request for a building permit in the floodplain, the applicant must include an elevation certificate in order to be in compliance. In addition, if an applicant intends to fill onsite, a letter of map of revision must be submitted along with the application. According to NFIP requirements in the Floodplain Ordinance, building permits should be reviewed to assure sites are reasonably safe from flooding and require anchoring to prevent flotation, collapse, or lateral movement and construction out of flood resistant materials.

Flood Hazard District of Concord

In the Concord Zoning Ordinance is a section regarding zoning in the Flood Hazard District. The district was established for several reasons, including the protection of public and occupants of the floodplain from flooding damage; reduction of flooding hazards; and the maintenance and preservation of the floodplain areas so that they are optimal in their ability to hold, store, and release precipitation runoff. There are five floodplain zones in Concord, listed in order of highest risk of flooding to lowest: (1) the floodway and F2 Districts, (2) the 100-year and the F1 floodplain Districts, and (3) the 500-year floodplain Districts. Depending on the zones, many uses are prohibited (the closer to the river, the more uses are prohibited); storage of toxic or hazardous materials is not allowed in any of the aforementioned zones.

Community Assistance Visit (CAV)

Community Assistance Visits are conducted by the National Flood Insurance Program in any communities participating in the insurance program. These visits are required by the NFIP to review a community's compliance with floodplain regulations, and any violations are brought to the community's attention so they can be corrected. Communities that wish to join the NFIP must agree to comply with local floodplain regulations, and as regulations are revised periodically, the community must update their regulations as well.

A NH Office of Energy and Planning representative conducted a Community Assistance Visit in Concord with City staff on July 22, 2009. She reviewed the ordinance and regulations, administration and enforcement, floodplain maps and study, and the City's floodplain management program.

Procedural recommendations were made, including all development in the Special Flood Hazard Area requires a permit, keeping elevation certificates on file, and not making flood zone determinations for lenders or insurance agents. It was found that Concord is in compliance with current NFIP regulations.

Concord should look to initiate a new CAV within the next three years.

Potential Administrative Techniques to Minimize Flood Losses in Concord

In order to reduce flood risks, the Code Enforcement and Community Development staff should be familiar with the Floodplain Ordinance and the NFIP. In addition, the Planning Board should be familiar with NFIP policies, especially those regulations that are required to be incorporated into the Subdivision/Site Plan Review regulations. A workshop sponsored by the New Hampshire Office of Homeland Security and Emergency Management or the New Hampshire Office of Energy and Planning would be appropriate to educate current staff and volunteers on a bi-annual basis.

An essential step in mitigating flood damage is participation in the NFIP. Concord should work to consistently enforce NFIP compliant policies to continue its participation in this program.

It should be noted that the City's Ordinances include regulations that exceed those of the NFIP. In the area along the Merrimack River from the Bow townline to the breached Sewalls Falls Dam, the City adopted the recommendations of the Army Corps Engineers and requires minimum floor elevation averaging approximately 4 feet higher than the 1999 FEMA Study. In the area along the Merrimack River above the Sewalls Falls Dam, the City requires minimum floor elevations 2 feet higher than the 1999 FEMA Study. For areas adjacent to all other water bodies that were studied, the City requires minimum floor elevations 1 foot higher than the 1999 FEMA Study. Another significantly more conservative City regulation is the prohibition of dwelling units from being located in the FEMA 100 year floodplain and the F1 floodplain.

CHAPTER 7. LOCAL HAZARD MITIGATION OBJECTIVES

2011 PLAN UPDATE

The General and Hazard-Specific Objectives previously developed were reviewed and updated as needed by the Hazard Mitigation Plan Update Task Force during a public meeting. The hazard incidents have increased over the last five years, so it was important to reassess the objectives' relevancy to the overall hazard mitigation actions which the City has identified.

INTRODUCTION

The following objectives were developed by the Hazard Mitigation Plan Update Task Force to enable the City to address the primary hazards in the community. Collectively, they will help formulate the mitigation strategies documented in the following chapters.

GENERAL OBJECTIVES

The objectives were initially excerpted from the 2004 State Hazard Mitigation Plan and amended as needed to reflect Concord's community needs. They were reevaluated and amended as needed for the 2011 Plan update.

1. To improve upon the protection of the general population, the citizens of the City and guests, from all natural and human-made hazards.
2. To reduce the potential impact of natural and human-made disasters on the City's critical support services.
3. To reduce the potential impact of natural and human-made disasters on critical facilities in the City.
4. To reduce the potential impact of natural and human-made disasters on the City's infrastructure.
5. To improve emergency preparedness.
6. To improve the City's disaster response and recovery capability.
7. To reduce the potential impact of natural and human-made disasters on private property.
8. To reduce the potential impact of natural and human-made disasters on the City's economy.
9. To reduce the potential impact of natural and human-made disasters on the City's natural environment.
10. To reduce the City's liability with respect to natural and human-made hazards generally.
11. To reduce the potential impact of natural and human-made disasters on the City's specific historic treasures and interests as well as other tangible and intangible characteristics which add to the quality of life of the citizens and guests of the State.
12. To raise the awareness of emergency preparedness activities by using social media applications which will have a high impact

HAZARD-SPECIFIC OBJECTIVES

Objectives were developed to specifically address the predominant hazards, of the 39 different hazards examined, that are most likely to affect the City. The Hazard and Vulnerability Assessment Tool was referenced to ascertain which hazards were the highest risk to Concord, and these are listed below. The Assessment is available in **CHAPTER 12. APPENDIX**. From these objectives, strategies will be developed for the community to implement.

Flood

13. To minimize flood impacts to life, property, and infrastructure on the Merrimack, Contoocook, Turkey, and Soucook Rivers and their floodplains.
14. To minimize flood and erosion impacts from weather events on roadways and bridges.

Fire

15. To minimize fire damage to life, property, and infrastructure, specifically the Downtown Conflagration Area, Garvins Falls, Broken Ground, and Mast Yard, Hazardous Abandoned Vacant (HAV) buildings, and suburban areas adjacent to these rural areas.

Ice and Snow

16. To minimize the threat to life, property, and infrastructure from ice and snow events, including building collapse from snow loads.
17. To minimize the impact to citizen safety and business loss through blocked transportation systems from ice and snow events.

Wind and Lightning

18. To minimize wind and lightning damage to life, property, and infrastructure at the Concord Municipal Airport, to transportation systems, in urban areas, and in rural areas.

Human

19. To minimize the threat of human disturbances to life, property, and infrastructure, including incidents at the schools, City buildings, the State Offices, the Federal Building, and Concord Hospital.

Biological

20. To continue to work closely with the Capital Area Public Health Network to integrate emergency planning efforts and exercises.

Technological

21. To minimize the impact to populations that would be vulnerable during hazardous materials incidents.
22. To protect, maintain, and update all information technology and communications systems.
23. To minimize the impact of utility failure during severe weather events.

CHAPTER 8. EXISTING MITIGATION SUPPORT STRATEGIES

2011 PLAN UPDATE

The Hazard Mitigation Plan Update Task Force reviewed each of their identified strategies from 2007 and updated the information. Some were no longer in practice, others had improvements or changes over the last five years since they were first identified, and additional activities were added. American Red Cross strategies were removed as the organization is not a City Department and their practices have changed from what was previously written here. A listing of the existing plans reviewed for **CHAPTER 8** was provided. Action items from 2007 which were accomplished are now listed here as existing mitigation strategies.

INTRODUCTION

The Hazard Mitigation Plan Update Task Force identified a number of pro-active protection mechanisms that are currently place in Concord that could reduce the damages and losses in the event of a natural disaster or secondary disaster. Listed by Department or Board, the tables reflect what plans, activities, processes, or infrastructure that each has to mitigate disaster effects.

CHAPTER 8. EXISTING MITIGATION STRATEGIES contains an inventory of locally-important existing mitigation activities which have a positive impact on the way hazard events are handled within the community. Most activities are not hazard mitigation Actions. These strategies support the Action Plan and help decrease the community's hazard risk. **CHAPTER 10. EVALUATION AND IMPLEMENTATION OF ACTIONS** contains the Action Plan that the City is working to achieve between 2011-2016. These **CHAPTER 8.** supporting programs, policies, training programs, plans, activities, completed Actions, etc. are not STAPLEE-rated like the Actions in **CHAPTER 10.**, but instead serve to sustain and assist the community to maintain and accomplish its hazard mitigation Actions and priorities.

REVIEW OF EXISTING PLANS

During the Hazard Mitigation process and the identification of existing mitigation for **CHAPTER 8. EXISTING MITIGATION SUPPORT STRATEGIES**, the Hazard Mitigation Committee used their knowledge of the documents utilized for their duties with the City of Concord to develop the existing and potential Actions. The following plans and documents were referenced for the development of this Plan:

- Zoning Ordinance
- Emergency Operations Plan
- Fire Department SOGs
- Hazard Mitigation Plan
- Mutual Aid Agreements
- Police Department SOGs
- Highway Department Policies
- Capital Improvements Program
- Subdivision Regulations
- Site Plan Review Regulations
- City Ordinances
- Master Plan

DESCRIPTION OF SUPPORTING PROJECTS, PROGRAMS, AND ACTIVITIES

Each existing program, policy, activity, plan, training, process, regulation, ordinance, guidelines, agreement, improvement, Committee, drill, specialized equipment, partnership, etc. which assists with mitigating hazards was identified by the Hazard Mitigation Committee by each City Department. The Task Force discussed the *Effectiveness* of each strategy and recommended changes or improvements to their existing programs. *Descriptions* of the activity were provided, as well as the area of Concord covered by the activity. The responsible Department was identified. *Effectiveness* of the activity was rated on a High-Medium-Low scale. The results of existing mitigation strategies identification are displayed in [Table 14A](#) to [Table 14G](#).

In addition, the Actions which were COMPLETED from the 2007 Plan are listed within these [Tables](#). The completion date of the Action from 2007 is listed and [CHAPTER 10](#) Action Plan's *Project Rationale* was transferred to the *Description* column. COMPLETED Actions are gauged according to their *Effectiveness* and whether *Future Improvements or Changes* are required, in the same manner as the existing mitigation strategies listed by each Department.

Table 14A
Supporting Strategies: Fire Department and EMS

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
Capital Area Fire Mutual Aid Compact	Participate with the Capital Area Fire Mutual Aid Compact. 23 agencies. Concord has dispatched resources during several recent events around the State.	Entire City, and resources to other communities	Fire Chief	High	Continue to ensure the Compact has an active exercise schedule and mutual aid drills, and that the communications center supports subscribers. Supporting activity of the Department to the Mitigation Plan.
Hazardous Materials Response Team	Participate in regional Hazardous Materials Response Team. Covers 41+ communities.	Entire	Fire Chief	High	Continue to participate in exercise schedule. Supporting activity of the Department to the Mitigation Plan.
Windstorm Preparation Procedures	Following February 2010 windstorm, the after action report reported a number of steps to improve emergency response procedures and the recommend adoption of model procedures which align with best practices for storm response.	Entire	Fire Chief	Moderate	Incorporate into Fire Department procedures through adoption of the model. Continually monitor and update for compliance to this supporting activity of the Mitigation Plan.

Table 14A, continued
Supporting Strategies: Fire Department and EMS

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
Emergency Operations Plan 2005	City of Concord Emergency Operations Plan was adopted in 2005. Has Department specific annexes.	Entire	Fire Chief	Moderate	Updated about every two years. The EOP is scheduled for an update. Continually monitor and update for compliance to this supporting activity of the Mitigation Plan.
All Hazards Exercise Drills	Have completed several full scale drills, but in the last few years have been focusing on table top and functional drills. Last full scale drill may have been State House dirty bomb scenario in 2008.	Entire	Fire Department/ Police Department	High	Reevaluate the exercise schedule, and consider undertaking more tabletop exercises. Supporting activity of the Department to the Mitigation Plan.
Plane Crash Procedures	City has draft procedure, has not exercised it yet.	Entire	Fire Department	Moderate	Plan to undertake a Department functional and tabletop exercise in 2011. Supporting activity of the Department to the Mitigation Plan.
NH Federation of Mutual Aid's Statewide Mutual Mobilization Program	Participate with the NH Federation of Mutual Aid's statewide mutual aid program. Statewide Mutual Mobilization Program is currently being worked on. City participates in the update. The plan is for moving resources to the State to handle major fire emergencies.	Entire	Fire Chief	Moderate	Continue participating in the update. Supporting activity of the Department to the Mitigation Plan.
Mass Decontamination Policy and Program	Maintain a Mass decontamination policy and program. City has the ability to perform quickly. Every fire fighter is decon certified. Large amount of time and resources put toward the program.	Entire	Fire Chief	High	Supporting activity of the Department to the Mitigation Plan.

Table 14A, continued
Supporting Strategies: Fire Department and EMS

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
Boat Inventory	Maintain an inventory of Boats within the Department. City owns 3 inflatables, plus 1 rigid hull rib inflatable. Have upgraded water rescue capability with acquisition of a rigid inflatable boat. Last training on the Merrimack was in December 2010. Fire Dept can deploy boats quickly throughout the City. Have a diverse fleet.	Entire	Fire Chief	High	Supporting activity of the Department to the Mitigation Plan.
Response Policy for All Potential Incidents 2010	Response Policy for all potential incidents, updated in 2010. Specifies the level of resources committed to a number of potential incidents. The plan is the most revisited in the FD.	Entire	Fire Chief	High	Plan is under cost analysis and revision currently. Continually monitor and update for compliance to this supporting activity of the Mitigation Plan.
Hazardous Materials Response Plan & Inventory	Hazardous Materials Response plan and Inventory	Entire	Fire Chief	High	Supporting activity of the Department to the Mitigation Plan.
Response Policy for State Prison Incidents	Response Policy for State Prison incidents	NHSP	Fire Chief	High	Supporting activity of the Department to the Mitigation Plan.
Extensive GIS Mapping	Extensive mapping programs, Electronic, GIS and hard copy Waterways, utilities, etc	Entire	Fire Chief	High	Supporting activity of the Department to the Mitigation Plan.
Current Computer Response and Reporting Programs	Electronic Computer programs for CAMEO, ALOHA, Tier II reporting	Entire	Fire Chief	High	Annually review and update. Supporting activity of the Department to the Mitigation Plan.
Mass Casualty Incidents Policy	Department policy on Mass Casualty Incidents	Entire	Fire Chief	High	Annually review and update. Supporting activity of the Department to the Mitigation Plan.

Table 14A, continued
Supporting Strategies: Fire Department and EMS

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
Emergency Recall of Personnel Program	Maintain a program for emergency recall of personnel	Entire	Fire Chief	High	Supporting activity of the Department to the Mitigation Plan.
Suspicious Package Protocols	Suspicious package protocols	Entire	Fire Chief	High	Supporting activity of the Department to the Mitigation Plan.
Vulnerability Assessment Listing	City wide Vulnerability assessment listing	Various	Fire Chief	High	Supporting activity of the Department to the Mitigation Plan.
Facility Preplans Program	City wide program of facility preplans	Various	Fire Chief	High	Supporting activity of the Department to the Mitigation Plan.
ESF-6 Mass Care and Shelter Update	Updated ESF-6 (Emergency Support Function), Mass Care/Shelters portion of the NH EOP	Entire	Emergency Management Director	High	Awaiting publication of National ARC mass care policy guidance. Supporting activity of the Department to the Mitigation Plan.
Emergency Sustainability at NHTI	Coordinate with NHTI for Emergency Sustainability (PD). NHTI is the primary location for the Mass Vaccination Clinic for the Concord Catchment area.	Entire	Emergency Management Director	High	Supporting activity of the Department to the Mitigation Plan.
Enhanced Security at Fire Department Facilities COMPLETED June 2010	Several incidents of breaking and entering, and theft would be deterred or prevented by improving security at the stations. Prevention and deterrence methods would be minimal compared to the cost of losing critical equipment that could impact homeland security.	Fire Department Facilities	Fire Chief	High	Continue enhancing facilities. Continually monitor and update for compliance to this supporting activity of the Mitigation Plan.

Table 14A, continued
Supporting Strategies: Fire Department and EMS

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
Implemented TEMSIS Reporting System (FD). COMPLETED 2007	TEMSIS will enable the city and state to better collect, analyze and provide feedback on a wide range of medical quality control and quality improvement initiatives. Improvement in the delivery of pre-hospital medical services will ultimately reduce medical costs and allow for the appropriate allocation of resources. This should result in reduced medicare and Medicaid costs.	Entire	Fire Chief	High	Continually monitor and update for compliance to this supporting activity of the Mitigation Plan.
Secured Dedicated Phone Lines and Cellular Phones For Use in Emergencies (FD). COMPLETED Map 2006	Purchase from the Telco carriers that provides priority connect services that gives the safety group first prior during emergencies.	EOC at Fire Department	Emergency Management Director	High	Continually monitor and update for compliance to this supporting activity of the Mitigation Plan.
Developed a Coordinated Plan For Responding to Storms (FD). COMPLETED 2007	During high frequency emergency response situations it is critical for emergency services to triage the emergencies to ensure that those most in need get help first. It is also critical to make certain that any call is not missed. An appropriate coordinated storm response plan decreases morbidity and mortality and reduces property loss. Fire Department will coordinate with the Police Department and General Services on this project.	Entire	Emergency Management Director	High	Continually monitor and update for compliance to this supporting activity of the Mitigation Plan.
Adopted Public Health Objectives from the Capital Area Public Health Plan (TF). COMPLETED September 2009	Mass vaccination clinic at NHTI. The City wants to proactively plan for a mass vaccination clinic. This includes an assessment for regional needs for any type large scale epidemic.	Entire	Emergency Management Director	High	Continually monitor and update for compliance to this supporting activity of the Mitigation Plan.

Source: Concord Hazard Mitigation Task Force 2007 and 2011

Table 14B
Supporting Strategies: Police Department

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
Police Department Mutual Aid Compacts	Have mutual aid compacts with the surrounding police department to provide for additional police officers if needed.	Entire	Police Chief	High	Update the mutual aid compacts as needed. Covered under Limits of Authority-General Orders. Supporting activity of the Department to the Mitigation Plan.
Tactical Team Unit Mutual Aid Agreements	Our Tactical Team Unit has signed an agreement with all of the other regional and local Special Response Teams to provide for additional Tactical Teams if needed	Entire	Police Chief	High	In 2007, Tactical Unit merged with Central NH Special Operations Unit covering Central NH. Supporting activity of the Department to the Mitigation Plan.
General Order on Evacuation	Department General Order for Evacuation of our Watch Commander office and dispatch center to go to Merrimack County Sheriff's Office. They have similar order to use our facility if needed.	Entire	Police Chief	High	Under current revision and updating. Supporting activity of the Department to the Mitigation Plan.
General Order on Bank Alarms 2008	General Order regarding bank alarms and our response. Includes Bank addresses and contact numbers. Updated on 11/30/08.	Several locations without city limits	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
General Order on Motor Vehicles Pursuits and Suspect Apprehension 2008	General Order on Motor Vehicles Pursuits and apprehending fleeing suspects. Updated on 11/30/08.	Entire	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
General Order on Unusual Occurrences 2007	General Order on handling Unusual Occurrences. Updated on 02/25/07.	Entire	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.

Table 14B, continued
Supporting Strategies: Police Department

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
General Order on Aircraft Accidents 2002	General Order on handling Aircraft Accidents. Last Updated 01/13/2002.	Entire	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
General Order on Fire Scenes 2001	General Order on handling Fire Scenes. Last Updated 11/25/2001.	Entire	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
General Order on Hazardous Material Incidents and WMD Training 2002	General Order on Hazardous Material Incidents and continuous training on Weapons of Mass Destruction as part of in-service training. GO Last Updated 01/13/2002 and training is done yearly on basic WMD.	Entire	Police Chief and Career Development Unit	High	Supporting activity of the Department to the Mitigation Plan.
General Order on Concord Hospital Disasters 2002	General Order on responding to Concord Hospital Disasters. Last Updated 01/13/2002.	Concord Hospital and entire city	Police Chief and Hospital Admin	High	Supporting activity of the Department to the Mitigation Plan.
General Order on COBRA Incidents 2002	General Order on dealing with COBRA incidents (Chemical, Ordinance, Biological and Radiological Incidents). Last Updated 01/13/2002.	Entire	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
General Order on Mass Casualty incidents 2010	General Order on Mass Casualty incidents. Updated on 02/2010.	Entire	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
General Order on Emergency Preparedness 2010	General Order on Emergency Preparedness. Updated on 11/22/2010.	Entire	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
General Order on Civil Disturbances 2002	General Order on Civil Disturbances. Last Updated 01/13/2002.	Entire	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
General Order on Strikes and Labor Disputes 2001	General Order on Strikes and Labor Disputes. Last Updated 11/25/2001.	Entire	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.

Table 14B, continued
Supporting Strategies: Police Department

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
General Order on Flood Control Emergencies 2010	General Order on Flood Control Emergencies. Update on 10/3/10.	Entire	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
General Order on Blackouts and Power Outages 2010	General Order on Blackouts and Power Outages. Updated on 09/12/2010.	Entire	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
General Order on Prison Escapes and Disturbances 2002	General Order on Prison Escapes and Disturbances. Last Updated 01/13/2002	NH State Prison at 280 North State St.	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
General Order on High Risk Incidents 2008	General Order on High Risk Incidents. Updated 01/06/08	Entire	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
General Order on Bomb Threats and Bomb Disposal Incidents 1991	General Order on Bomb Threats and Bomb Disposal Incidents. Last Updated 04/19/1991	Entire	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
Mass Vaccination Clinic	Mass Vaccination Clinic for the Concord Hospital catchment area.	Entire	Police Chief and Concord Hospital and Health and Human Services	High	Has been developed and submitted for approval to NHHSEM but have not received plan back for approval. Supporting activity of the Department to the Mitigation Plan.
Incident Command System (ICS) Training	Incident Command System training for all sworn personnel of the Concord Police Department	Entire	Police Chief and Career Development Unit	Medium	Policy 02/25/07 outlining roles and responsibilities. Supporting activity of the Department to the Mitigation Plan.

Table 14B, continued
Supporting Strategies: Police Department

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
Installed a Radio Transmitter at Concord Hospital (PD). COMPLETED Summer 2010	Multiple times per month emergency responders are delayed because their portable radios do not receive emergency calls while units are at Concord Hospital. Further, units operating at Concord Hospital during an emergency are frequently unable to communicate with one another thus compromising emergency operations. Concord Hospital is listed as one of the top ten critical infrastructure facilities in the community. Response delays are directly related to increased morbidity and mortality for both rescue and fire incidents. The PD will seek to coordinate with Concord Hospital for the project.	Concord Hospital	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
Established a System for Public Notification and Information During a Disaster (PD). COMPLETED May 2006	The Public Notification System allows Public Safety Agencies to quickly identify citizens who are in harms way, notify them by telephone or e-mail of impending danger and provide specifics instructions as to how to avoid the danger. Delays in public notification of an impending or on-going crisis decreases the ability of the citizens to get out of harms way and increases the likelihood that additional response resources will be required to rescue them.	Entire	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
Established a Relationship with an Intelligence Fusion Center (TF). COMPLETED October 2010	This relationship will ensure information and intelligence will be shared at a regional and cross functional level.	Entire	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.
Coordinated with NHTI for Emergency Sustainability (PD) through the Capital Area Public Health Network. COMPLETED January 2010	NHTI is the primary location for the Mass Vaccination Clinic for the Concord Catchment area. Memos of Understanding and policies and protocols need to be put into place for activation of this plan.	NHTI for Entire City	Police Chief	High	Supporting activity of the Department to the Mitigation Plan.

Source: Concord Hazard Mitigation Task Force 2007 and 2011

Table 14C
Supporting Strategies: General Services Department

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
Snow Removal Policy	Snow Removal Policy, 21 plow routes, Anti-icing pre-treatment procedures. Routes are on City website.	Roadways	Highway & Utility Superintendent	High	Yearly review of plow routes. Supporting activity of the Department to the Mitigation Plan.
Emergency Highway Mobilization Process	On-call Highway foreman mobilize staff to respond appropriately. Work with other emergency personnel; Police, Fire, Unil Electric	Roadways	Highway & Utility Superintendent	High	Yearly refresh contact information. Supporting activity of the Department to the Mitigation Plan.
Water Treatment Plant Vulnerability Assessment Report and Emergency Response Plan	Water Treatment Plant Vulnerability Assessment Report and Emergency Response Plan prepared and on file with NH DES and EPA	City of Concord	Water Superintendent	High	Update contact information with NH DES and EPA. Supporting activity of the Department to the Mitigation Plan.
Emergency Water Mobilization Process	On-call Water foreman mobilize staff to respond appropriately. Work with other emergency personnel; Police, Fire. Notify the affected parties	City of Concord	Highway & Utility Superintendent	High	Yearly refresh contact information. Supporting activity of the Department to the Mitigation Plan.
Wastewater Treatment Plant Vulnerability Assessment Report and Emergency Response Plan	Wastewater Treatment Plant Vulnerability Assessment Report and Emergency Response Plan prepared and on file with NH DES and EPA	City of Concord	Wastewater Superintendent	High	Update contact information with NH DES and EPA. Supporting activity of the Department to the Mitigation Plan.
Emergency Fire and Traffic Accident Mobilization Process	On-call Highway foreman mobilize staff to respond appropriately. Water foreman assist with water needs. Work with other emergency personnel; Police, Fire	City of Concord	Highway & Utility Superintendent	High	Yearly refresh contact information. Supporting activity of the Department to the Mitigation Plan.
Emergency Flooding Mobilization Process	On-call Highway foreman mobilize staff to respond appropriately. Work with other emergency personnel; Police, Fire	City of Concord	Highway & Utility Superintendent	High	Yearly refresh contact information. Supporting activity of the Department to the Mitigation Plan.

Table 14C, continued
Supporting Strategies: General Services Department

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
Emergency Equipment for Severe Weather	Emergency equipment available to respond; generators, barricades, variable message boards, sand bags, etc.	City of Concord	Equipment and Highway & Utility Superintendents	High	Refresh supplies. Supporting activity of the Department to the Mitigation Plan.
Dam Responsibility.	General Services has control of the dam at the Lake, with a mitigation plan and yearly inspection process in place. 1-2 other dams are licensed by the City. No particular dam response plan.	Entire	General Services Director	Low	Continually monitor and update for compliance to this supporting Action of the Mitigation Plan.
Located a Backup Operation Center for Water and Wastewater Treatment Plants (IS). COMPLETED Water - in July 2010 WW - in July 2009	Sites are presently operated via remote. An off-site facility that acts as a hot-site should the primary site becomes uninhabitable for normal business activities. The hot-site provides backup and houses a redundant server/client environment.	Water and Wastewater Treatment Plants	General Services Director	High	Continually monitor and update for compliance to this supporting activity of the Mitigation Plan.
Created Off-Premises Data Storage for Water and Wastewater Treatment Plants (IS). COMPLETED Water - in July 2010 WW - in July 2009	Off-premises facility for storage of copies of critical data and 24/7 access during emergencies.	Water and Wastewater Treatment Plants	General Services Director	High	Continually monitor and update for compliance to this supporting activity of the Mitigation Plan.
Prepared a Flood Action Plan for the Wastewater Treatment Plants (GS). COMPLETED 2009	The critical nature of the wastewater treatment plants warrants a standard operating procedure and emergency response to assure operability.	Wastewater Treatment Plants (GS)	General Services Director	High	Continually monitor and update for compliance to this supporting activity of the Mitigation Plan.

Source: Concord Hazard Mitigation Task Force 2007 and 2011

Table 14D
Supporting Strategies: Community Development Department

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
Reduction of Impact Fee for Contaminated Property in NH Brownfields Program	To encourage cleanup and redevelopment of contaminated properties, the City created an incentive whereby an impact fee for a contaminated property will be reduced if the property is enrolled in the NH Brownfields Program.	Opportunity Corridor	Community Development	Not yet tested	Supporting activity of the Department to the Mitigation Plan.
Zoning and Planning Regulations to Reduce Fire Risk	Continued use of Zoning and Planning Regulations, specifically building densities, set back, frontage, and building height regulations to help reduce risk of fire.	Entire	Community Development - Code Enforcement and Planning Division	High	Continually monitor and update for compliance to this supporting Action of the Mitigation Plan.
Zoning and Planning Regulations to Reduce Flood Risk	Continued use of Zoning and Planning Regulations, specifically floodplain / floodway regulations, wetlands and drainage regulations. Had review with NHOEP, adopted updates to regulations as per requirements of FEMA	Entire	Community Development - Code Enforcement and Planning Division	High	Continually monitor and update for compliance to this supporting Action of the Mitigation Plan.
Zoning and Planning Regulation to Reduce Blockage of Transportation Network	Continued use of Zoning and Planning Regulations to insure that roadways have adequate traffic flow and level of service so as emergency responders are not delayed.	Entire	Community Development - Planning Division	High	Continually monitor and update for compliance to this supporting Action of the Mitigation Plan.
Zoning and Planning Regulations to Reduce Landslides and Erosion Risk	Continued use of Zoning and Planning Regulations, specifically steep slope regulations, and bluff setbacks	Entire	Community Development - Planning Division	High	Continually monitor and update for compliance to this supporting Action of the Mitigation Plan.

Table 14D, continued
Supporting Strategies: Community Development Department

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
Building Code Provisions to Reduce Earthquake Damage Risk	Continued use of building code provisions related to seismic events.	Entire	Community Development - Code Administration	High	Continually monitor and update for compliance to this supporting Action of the Mitigation Plan.
Reviewed Drainage Areas of Previously Impacted Areas and Prepare Capital Plan for Mitigation of Any Potential Future Flooding (TF). COMPLETED July 2010	Recent experience from the May 2006 flooding discovered deficiencies in the City's aged infrastructure. In order to address these deficiencies, engineering services would be used to analyze and prioritize repairs before another flood impacted the City.	Entire	Community Development - Planning Division	High	Supporting activity of the Department to the Mitigation Plan.
Presented Revisions to Subdivision Regulations for Residential Sprinkler Systems in New Homes As Appropriate (FD). COMPLETED June 2010	Sprinkler systems in single family residences located in more remote locations of the City would help protect life and property for those buildings in areas of the City where Fire Department response times are extended. Reduces fire risk.	Rural	Community Development - Planning Division	High	Enforcement may be precluded by pending statutory change. Continually monitor and update for compliance to this supporting Action of the Mitigation Plan.
Developed Aquifer Protection Ordinance (CD) COMPLETED April 2010	An aquifer ordinance will serve to protect City's existing groundwater resources for future use. Ordinance restricts/regulates hazardous materials in proximity to potable groundwater supplies. Reduces groundwater contamination risk.	Over Aquifers	Community Development - Planning Division	High	Continually monitor and update for compliance to this supporting Action of the Mitigation Plan.

Source: Concord Hazard Mitigation Task Force 2007 and 2011

Table 14E**Supporting Strategies: Community Development Department - GIS Division**

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
Access to GIS Maps on All Computers	Have GIS on desktop, laptop and website for access to maps and data about anything that has a fixed location in the city. In the future we will be able to show moving assets like police cars, fire trucks and plow trucks via websites if AVL systems are implemented.	Entire	Various depending on responsibilities	High	Wireless internet for field laptops to look at live up-to-date data and moving assets. Supporting activity of the Department to the Mitigation Plan.
Enhanced the Asset GIS Layers to Enable Instant Database Access for Use During Emergency Response (TF). COMPLETED December 2006	Quick access to critical information regarding target structures improves situation assessment capabilities and assessment of fireground factors for incident commanders.	Entire	GIS/Engineering	High	Supporting activity of the Department to the Mitigation Plan.

Source: Concord Hazard Mitigation Task Force 2007 and 2011

Table 14F
Supporting Strategies: Information Services Department

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
Information Recovery Plan	An Information Recovery Plan has been developed.	All City Facilities	Information Services Director	High	Supporting activity of the Department to the Mitigation Plan.
City Communication Technology	IS handles all communications in the City, including phone, cellular, modem, fiber optic, and wireless.	All City Facilities	Information Services Director	High	Supporting activity of the Department to the Mitigation Plan.
Provided GIS Software (CD-GIS). COMPLETED Spring 2010	Installed ArcReader on laptops or PCs that need access to the Critical Facilities Layer.	All City Facilities	Information Services Director	High	Supporting activity of the Department to the Mitigation Plan.
Developed a Plan to Protect the City's Data and Resources (TF). COMPLETED 2011	The City's data is critical to the City, county, and state. Much of the City's data is irreplaceable, such as the City Clerk's vital records. Much of the paper data needs to be converted to digital mediums. There needs to be a plan for archiving and maintaining this data.	All City Facilities	Information Services Director	High	Supporting activity of the Department to the Mitigation Plan.

Source: Concord Hazard Mitigation Task Force 2007 and 2011

Table 14G
Supporting Strategies: Library

Existing Program or Activity	Description	Area of City Covered	Enforcement	Effective-ness	Future Improvements or Changes
Emergency Information for Immediate Distribution	"Emergency Packets" are given to the Library Director and the two Division Heads to take home, and a copy is kept at the Reference Desk. These packets contain emergency contact information for a variety of emergency responders as well as for the City IT staff, public properties staff, utility and hospital contact numbers, and the Northeast Document Conservation Center, which provides help with damage to library materials. This packet also has floor plan maps and staff contact information.	Penacook and City Libraries	Library Director	High	Update. Supporting activity of the Department to the Mitigation Plan.
Emergency Safety Procedure Manual	Emergency Safety Procedure Manual in a number of locations through the library. Manual provides procedures for dealing with a variety of emergency situations, from weather situations to hazardous materials. Includes a safety policy that outlines how to deal with a variety of emergencies that is given to staff members when they are hired.	Penacook and City Libraries	Library Director	High	Update. Supporting activity of the Department to the Mitigation Plan.
Online Disaster-Planning Tool for Cultural and Civic Institutions	Started to create a "dPlan" (The Online Disaster-Planning Tool for Cultural and Civic Institutions) through the Northeast Document Conservation Center. This is a lengthy document and Library has completed parts of it that detail the collection and key personnel. Accessible online.	Penacook and City Libraries	Library Director	In progress	Complete the Plan. Supporting activity of the Department to the Mitigation Plan.
Procedure for Innovative Interfaces Data	Procedure for Innovative Interfaces data. Data server is housed off-site (at City Hall). Library runs a weekly full tape backup that is taken off premises by the staff member in charge of automation. The system runs a daily tape backup that is kept for two weeks in the library computer room. Contract with Iron Mountain Intellectual Property Mgt. for a software escrow service for Innovative Interfaces system.	Penacook and City Libraries	Library Director	High	Supporting activity of the Department to the Mitigation Plan.

Source: Concord Hazard Mitigation Task Force 2011

CHAPTER 9. NEWLY IDENTIFIED MITIGATION ACTIONS

2011 PLAN UPDATE

The Task Force identified new Actions which can be undertaken for natural, human, or technological event mitigation. The 2007 strategies were reviewed to ensure their relevancy, and were updated or removed as needed. Objectives which the Action met were also identified.

INTRODUCTION

In addition to the programs and activities that Concord is currently undertaking to protect its residents and property from natural, human, or technological disasters, a number of additional strategies were identified by the Hazard Mitigation Plan Update Task Force for consideration. Many of these newly identified mitigation strategies will be considered for further action in the Mitigation Action Plan in **CHAPTER 10. EVALUATION AND IMPLEMENTATION OF ACTIONS**. Some of them are the result of improvements to the existing strategies identified in **Tables 14A- 14G** on the previous pages.

DESCRIPTION OF POTENTIAL MITIGATION ACTIONS

These types of activities were considered when determining new projects, programs and activities, listed in **Tables 15A-15G**, which Concord can develop:

- Life and Property Protection
- Emergency Services
- Public Information and Involvement
- Training and Preparation
- Planning and Implementation

The Hazard Mitigation Plan Update Task Force considered improvements to existing strategies, new programs or activities, and new projects that would improve the conditions in many of the assets identified in **CHAPTER 3. ASSET AND RISK IDENTIFICATION**. All strategies are considered Actions that the community can take, and will later be integrated into a Mitigation Action Plan in **CHAPTER 10. EVALUATION AND IMPLEMENTATION OF ACTIONS** with the responsible party identified, how much the Action will cost, and when and how the Action will be completed.

For tracking and informational purposes, after each *Name of Potential Action* is an abbreviation of the Department, in parentheses, which proposed the Action. The abbreviations are listed below:

FD - Fire Department
 PD - Police Department
 GS - General Services
 CD - Community Development
 CD-GIS - Community Development GIS
 IS - Information Services
 TF - Mitigation Planning Task Force

Main categories of hazards were used since each action for purposes of simplicity.

Table 15A
Potential Mitigation Actions: Flood

Meets Objective #	Name of Potential Action	Description of Potential Action	Affected Location	Type of Activity
13	Encourage Continued Floodplain Regulation (CD)	Continue to use the Army Corp of Engineers flood data for determining the floodplain (this is a more comprehensive standard than FEMA data). Continue to employ floodplain / floodway ordinances and regulations in order to protect the public.	Entire City	Life and Property Protection
12, 13, 14	Develop NFIP Public Awareness Program and Publicize the Availability of Flood Insurance (TF)	Develop brochures or provide information at the City Hall to homeowners that flood insurance is available to them through FEMA's Zone A classification. Information can be posted on the City website and linked to the FEMA website. A new floodplain ordinance was adopted in 2010.	Entire	Public Information and Involvement
13	Update the Zoning Ordinance to Comply with NFIP Requirements	The Zoning Ordinance needs to be updated as required to encompass any new requirements to the National Flood Insurance Program (NFIP) to retain the City's NFIP participation. The Floodplain Ordinance protects life and property by regulating distance of structures to flood hazard areas, regulating elevation, clarifying definitions, regulating new structures and encroachments, stating duties of the Code Enforcement Officer, etc. In 2010, the City adopted the latest required revisions.	Floodplain Areas	Life and Property Protection

Table 15A, continued
Potential Mitigation Actions: Flood

Meets Objective # (continued)	Name of Potential Action	Description of Potential Action	Affected Location	Type of Activity
13	Participate in NFIP Training	In order for Planning Board members and the Code Enforcement Officer to remain current with NFIP procedures and policies, regular training must be taken. Workshops are offered by the State and/or FEMA (or through other agencies) and addresses flood hazard planning and management.	Floodplain Areas	Training and Preparation
4	Undertake Roadway Monitoring and Maintenance Caused by City Dams (GS)	The City's responsibility is to monitor and address any deficiencies to mitigate roadway damage of the other 1-2 dams licensed by the City.	Roadways - Sheep Davis Road and Appleton Street	Life and Property Protection
3	Undertake Penacook Lake Dam Monitoring and Maintenance (GS)	City's Water Supply has an emergency response plan and is subject to yearly State inspection.	Penacook Lake	Life and Property Protection
4	Update Stormwater Management System at Bow Brook and South Street and Sunset Avenue	Problem is 48" (South Street) and 12" (Sunset Ave) pipes are undersized for flow from the South Street area. Solution is existing 24" overflow discharges to brook south of this outlet. May have already resolved this issue. Installation includes new 24" RC pipe for 300 LF and 18" PVC for 125 LF. In the City's CIP for FY2013.	Bow Brook at South Street and Sunset Avenue	Life and Property Protection
4	Update Stormwater Management System at Concord Heights	Small dia. pipes at Nodes "U", "W" and "AA". Problem is 24" thru 12" dia. pipes undersized for 10-year storm. Solution is Consider replacing pipes with large dia. Pipes. Installation includes new 36" RC pipe for 560 LF, 30" RC pipe for 930 LF.	Concord Heights	Life and Property Protection
4	Update Stormwater Management System at Ormond St, Christian Ave, Oriole Rd, East Side Dr and Partridge Rd	Small dia. pipes along Ormond St. Christian Ave, Oriole Rd, East Side Dr and Partridge Rd. Problem is 12" and 15" dia. pipes undersized for 10-year storm. Solution is Consider more detailed study of drainage area and replace pipes with larger dia. pipes.	Ormond St, Christian Ave, Oriole Rd, East Side Dr and Partridge Rd	Life and Property Protection
4	Update Stormwater Management System at West Sugarball Road to outfall on Merrimack River	Problem is Severe washout and erosion. Solution is Repair/Reconstruct drainage outfall.	West Sugarball Road at Merrimack River	Life and Property Protection

Table 15A, continued
Potential Mitigation Actions: Flood

Meets Objective # (continued)	Name of Potential Action	Description of Potential Action	Affected Location	Type of Activity
4	Update Stormwater Management System at Concord Hospital, South of Redington Road/West of Fruit Street	South of Redington Road, west of Fruit Street, 30" pipe. Problem is flat area has poor drainage. Solution is to consider installing larger pipes.	Concord Hospital, South of Redington Road/West of Fruit Street	Life and Property Protection
4	Update Stormwater Management System at Charles Street and Contoocook River	Problem is 12" pipe is undersized. Solution is detention, storage, or increase in pipe size.	Charles Street at Contoocook River	Life and Property Protection
4	Update Stormwater Management System at Pleasant Street and Miller's Brook	Problem is undersized culvert causing backups. Solution is to consider culvert replacement or storage/retention.	Pleasant Street at Miller's Brook	Life and Property Protection
4	Update Stormwater Management System at Merrimack Street and Bye Street	Problem is 12" pipes are undersized and illicit sewer connection. Solution is detention, storage, or increase in pipe size along with separating sewer connection.	Merrimack Street and Bye Street	Life and Property Protection
4	Update Stormwater Management System at Tanner Street and Village Street (Penacook)	Problem is 15" and 12" pipes are undersized. Solution is detention, storage, or increase in pipe size.	Tanner Street and Village Street (Penacook)	Life and Property Protection
4	Update Stormwater Management System at Noyes Street near Harvard Street	Problem is 18" pipe undersized. Solution is to reduce flow through retention or storage; or replace with a larger pipe.	Noyes Street near Harvard Street	Life and Property Protection
4	Update Stormwater Management System at Rumford Street between Penacook Street and Jennings Street	Problem is undersized 8" Diam pipe from large area to Walker St. Solution is to consider pipe replacement.	Rumford Street between Penacook Street and Jennings Street	Life and Property Protection
4	Update Stormwater Management System at Low Area at Borough, Washington and Fowler Triangle	Problem is Low area in neighborhood experiences severe flooding in heavy rain and spring conditions. Solution is to install new drainage pipes and outfalls or drywells for an immediate solution.	Low Area at Borough, Washington and Fowler Triangle	Life and Property Protection

Source: Concord Hazard Mitigation Task Force 2011

Table 15B
Potential Mitigation Actions: Fire

Meets Objective #	Name of Potential Action	Description of Potential Action	Affected Location	Type of Activity
5	Develop a Sprinkler Ordinance for the Conflagration Areas (PD)	Sprinkler systems should be considered in the Conflagration area buildings during renovations.	Conflagration Areas	Life and Property Protection
5	Utilize Emergency Operations Center and Incident Command System and Training for City Personnel (FD)	Use the Emergency Operations Center and Incident Command System and train for wildfires. One of the budget goals for 2011.	Entire City	Training and Preparation
15	Develop an Action Plan in Response to a Major Fire (GS & FD)	Develop an Action Plan in response to a major fire.	Entire City	Planning and Implementation
1	Assess the Need for a Plan For Development in Urban Interface Areas (FD)	Develop with Community Development and the Fire Department a plan for development in urban interface areas. Currently have a new sprinkler ordinance for rural homes without access to the City Water supply. The CD Department has standards on maximum driveway grade, and width for shared driveways which are intended to ensure access to homes for emergency equipment.	Entire City	Planning and Implementation
6	Identify Inaccessible Areas and Develop a Plan for Tanker Access (FD)	Identify inaccessible areas and develop a plan for interfacing with all wheel drive tankers.	Entire City	Planning and Implementation
15	Implement Natural Fire Breaks in Areas of High Concern (FD)	Implement natural fire breaks in areas of high concern	Entire City	Planning and Implementation
15	Implement a Sprinkler Program at Concord and Royal Gardens (FD)	Implement a sprinkler program at Concord and Royal Gardens	Heights	Planning and Implementation
15	Implement an Updated Fire Alarm System Program at all Multifamily Developments (FD)	Implement an updated fire alarm system program at all multifamily developments	Entire City	Planning and Implementation

Source: Concord Hazard Mitigation Task Force 2011

Table 15C
Potential Mitigation Actions: Ice and Snow

Meets Objective #	Name of Potential Action	Description of Potential Action	Affected Location	Type of Activity
17	Continue City Requirements for Underground Utilities (CD)	Maintain regulations requiring placement of electrical and other overhead utilities underground for development projects to combat ice problems.	Entire City	Planning and Implementation
16	Maintain Road and Driveway Slope Standards (CD)	Continue to maintain street and driveway standards to govern slopes of roadways, thereby maximizing the City's ability to respond to emergencies, especially ice, in all locations of the City.	Entire City	Planning and Implementation
5	Continue to Update Contact Information for Ice Storm Response (GS)	On-call Highway foreman mobilize staff to respond appropriately. Work with other emergency personnel; Police, Fire, Unitil Electric. Information should be revised on an annual basis.	Entire City	Emergency Services
8	Require Designation of Snow Storage Areas on Site Plans (CD)	Continue to require development projects to designate snow storage areas on development plans and designs in order to prevent undue flooding in the spring and adequate traffic circulation at sites during winter season.	Entire City	Planning and Implementation
16	Implement a Snow Drift Fencing Program (TF)	Enact a program for placing snow fences along appropriate roadways to alleviate the occurrence of drifts. The public should also be encouraged to privately erect snow fences on their properties. Langley Parkway is of particular concern and has been added to the list of area GS maintains.	Identified Roadways	Planning and Implementation
5	Review and Document Ice, Snow, and Wind Storm Response Procedures (GS)	Review Ice, Snow, and Wind Storm Response Procedures. The SOP is not documented in writing, but most is by experience. This should be placed in writing.	Entire City	Planning and Implementation
2	Review Material Availability for Ice and Snow Events (GS)	Review Material Availability for Ice and Snow Events. Materials include salt and sand, and the market is reviewed to obtain the best costs.	Entire City	Planning and Implementation

Source: Concord Hazard Mitigation Task Force 2011

Table 15D
Potential Mitigation Actions: Wind

Meets Objective #	Name of Potential Action	Description of Potential Action	Affected Location	Type of Activity
18	Coordinate Increased Security with Concord Airport (PD)	The Police Department does not have a specific plan for this occurrence and possibly should work with TSA and Airport personnel to find out how we could be of assistance if needed.	Concord Airport	Planning and Implementation
18	Maintain Building Codes to Reduce Wind Damage	Maintaining and enforcing building codes will minimize wind load damage.	Entire City	Life and Property Protection
9	Continue Requirements for Planting of Groundcover and Tree Breaks In Plan Review Process (CD)	Landscaping helps to prevent erosion (including erosion by wind) and dust. Trees help to serve as wind breaks.	Entire City	Planning and Implementation
5	Develop Windstorm Preparation Procedures	Incorporate Windstorm Preparation Procedures into Fire Department procedures through adoption of the model. Following February 2010 windstorm, the after action report reported a number of steps to improve emergency response procedures and the recommended adoption of model procedures which align with best practices for storm response.		Planning and Implementation

Source: Concord Hazard Mitigation Task Force 2011

Table 15E
Potential Mitigation Actions: Human

Meets Objective #	Name of Potential Action	Description of Potential Action	Affected Location	Type of Activity
3	Enhance Security System of Police Headquarters (PD)	The Police Department has instituted a building security system and video monitoring for some parts of the exterior of the building. Need to incorporate more cameras to better cover the exterior of the building.	Police Headquarters	Emergency Services
3	Secure City Hall (PD)	City Hall needs to look at making one point of entry and restricting off-hours entry to only those people that have security access. Currently the side door is often open late into the evening and no security is present.	City Hall	Life and Property Protection
3	Develop Coordinated Response to NH State Prison Disturbance (PD)	The Police Department has a policy for responding for assistance should a disturbance occur but we do not train with the prison or state police on a coordinated response. The Fire Department/EMS should also train for the response.	NH State Prison	Training and Preparation
2	Develop Coordinated Response to NH Military Reservation Emergencies (PD)	The NH Military Reservation has become more hardened over the past several years but we still respond to alarms within the complex during off-hours. We do not train with their personnel for a coordinated response should an event occur.	NH Military Reservation	Training and Preparation
1, 19	Utilize Resources of Concord Trailways During an Emergency (PD)	SWAT Team has undertaken training, but the Police Department should develop a communication method for speaking with drivers and Concord Trailways staff when an event is continuous so that we can gather information and direct actions to mitigate the event.	Concord Trailways	Planning and Implementation
3	Enhance Security at Unital Substations (Non-City) (PD)	Although there are people present at all hours, many of Unital's sub-stations are left without security measures making them susceptible for explosive devices.	Unital Substations	Life and Property Protection
2	Upgrade Radio System in Merrimack Valley High School (Non-City) (PD)	A SRO is currently assigned to this school but our current radio system cannot reach into the building, cutting off our connection to the officer. The school needs to have the radio system upgraded to give us communication ability.	Merrimack Valley High School	Life and Property Protection

Table 15E, continued
Potential Mitigation Actions: Human

Meets Objective # (continued)	Name of Potential Action	Description of Potential Action	Affected Location	Type of Activity
10	Enhance Security to Concord High School (Non-City) (PD)	There is currently a SRO assigned to this school but the building is frequently left open after normal hours and access can be gained to the entire school. The School is an open campus. Security needs to be enhanced and security officers put on duty for the off-hours. Our current radio system cannot reach into the building cutting off our connection to the officer. The school needs to have the radio system upgraded to give us communication ability.	Concord High School	Life and Property Protection
3	Install Security Monitoring System at Water Treatment Facility (GS)	The City needs to develop a method of observing the grounds and harden the target. Gates have been installed, but intrusion alarms must be installed.	Concord Water Treatment Facility	Life and Property Protection
3	Install and Monitor Security Monitoring System of Waste Water Treatment Facility (GS)	The City needs to install a security monitoring system at the gate and develop a method of observing the grounds.	Waste Water Treatment Plant	Life and Property Protection
8	Improve Building Security of Beaver Meadow Golf Course (Non-City) (GS)	The Golf Course should have intrusion alarms or lights for building security.	Beaver Meadow Golf Course	Life and Property Protection
1, 11	Enhance Security at Memorial Field (PD)	The City should fence area in the back and set up video surveillance at the buildings. Vandalism is rampant at Memorial Field.	Memorial Field	Life and Property Protection
19	Execute Mock Drills for Civil Disturbances (PD)	Many policies are currently in place to handle human disaster events. Mock drills for civil disturbances would be useful to find any areas that could be improved upon. CNHSOU conducts DHS drills with CFD, CPD, Concord Hospital, local venues	Entire City	Training and Preparation
3	Install a Surveillance System at City Facilities (IS)	Monitoring camera located to view facility perimeters. The Police Station already has a surveillance system, and the Capitol Commons parking garages. Monitoring of primary intersections is also a priority.	All City Facilities	Life and Property Protection
6	Enhance or Relocate the City's EOC (FD)	The current city EOC lacks security, space and the ability to remain set up for appropriate equipment. It could be enhanced by better access control, security within the complex, better technology (projection equipment), many recommendations for EOC upgrades in the 2010 windstorm after action report.	Entire City	Planning and Implementation

Source: Concord Hazard Mitigation Task Force 2011

Table 15F
Potential Mitigation Actions: Technological

Meets Objective #	Name of Potential Action	Description of Potential Action	Affected Location	Type of Activity
12	Enhance the Security of WKXL (PD)	The Police Department should work with WKXL Radio on hardening security.	WKX Radio Station	Emergency Services
12	Enhance the Security of WNHI (PD)	The Police Department should work with WNHI Radio on hardening security.	WNHI Radio Station	Emergency Services
1, 21, 23	Execute Mock Drills for Technological Disasters (PD)	Many Police Department policies are currently in place to deal with technological hazards but these policies have not been tested in a realistic scenario. Mock drills for black outs would be useful to find any areas that could be improved upon. Fire Department will be performing active shooter drill in March.	Entire City	Training and Preparation
6	Install Backup Power Sources for City Facilities (IS)	Maintain generators and install UPS for PCs/Servers to handle loss of power and brownouts to eliminate data corruption and equipment damage. Generators are at FD, PD, City Hall complex, GS, Water, and Wastewater.	All City Facilities	Planning and Implementation
22	Update GIS Critical Facilities Layer (CD-GIS)	Update the GIS layer (feature class) that has all (most) of the facilities listed in the Chapter 3 tables. There should be a "type" field for each table name.	Entire City	Planning and Implementation
22	Provide Ongoing GIS Training (CD-GIS)	City GIS staff performs group training.	Entire City	Training and Preparation
3	Maintain a Contingency Plan for City Hall Operations (TF)	Maintain the City Hall plan for data backup and retaining a functioning government in the event of a disaster. There is a regular schedule for data being shipped out.	City Hall	Planning and Implementation
2	Implement an Enterprise Resource System to Support City Services (FD)	Maintain an e-business architecture and environment that is driven by customers, vendors, stakeholders, sister communities and the ability to serve the public and business community.	Entire City	Planning and Implementation
4	Maintain Municipal Fire Alarm and Fiber Optic Network (FD)	Maintain critical business and emergency services communications systems including municipal fire alarm system, city telephone infrastructure, fiber optic network, and wireless communications systems.	Critical Facilities	Emergency Services
3	Devise Badge System for City Facilities (IS)	CPD is currently secure with Keyless card entry into Headquarters.	All City Facilities	Planning and Implementation

Source: Concord Hazard Mitigation Task Force 2011

Table 15G
Potential Mitigation Actions: Multiple Hazards

Meets Objective #	Name of Potential Action	Description of Potential Action	Affected Location	Type of Activity
5	Develop Fire Dispatch Back-up Plan (FD)	Develop and test a fire dispatch back-up plan to provide alternate location for fire/EMS dispatching services. This has been an active initiative. Have established microwave link and developing a training plan. Will be complete in December 2011.	Entire City as well as 19 members of the Capital Area Mutual Aid Compact	Emergency Services
5	Require NIMS Training for All Key Staff (GS)	Conduct National Incident Management System (NIMS) training/certification for all key city personnel to provide a common management system to facilitate emergency operations in a disaster scenario as mandated by FEMA (Homeland Security).	Entire City	Training and Preparation
22	Improve an Alternative Communication Plan (IS)	Currently, an informal communication method is used among departments. Use cellular phones in the development of a working plan in the event of loss of service.	All City Facilities	Planning and Implementation
22	Develop a Plan to Protect City Clerk's Records (TF)	Develop a plan to protect the City Clerk's records in the event of a disaster.	City Hall	Planning and Implementation
6	Maintain GIS Software to Utilize Hazard Mitigation Maps in Emergency Response Vehicles (TF)	Maintain the ArcReader or GIS software to place the computerized Hazard Mitigation Maps in emergency response vehicles and train personnel how to use the software.	Entire City	Training and Preparation
6	Maintain Dispatch Software and Hardware to Allow For AVL Capability and Priority Dispatching (FD)	Maintain dispatch software and hardware to allow for GPS/AVL automatic vehicle locator capability and priority dispatching. It's not being used as a planning tool, but as a tracking tool.	Entire City	Emergency Services
5	Develop and Implement a Response Plan for Special Operations Incidents (FD)	Develop and implement a citywide response plan for handling special operations incidents. Water, Heights, Confined space, hazardous materials	Entire City	Planning and Implementation
2	Develop a Plan to Improve Radio Coverage City-wide (FD)	Increased communications ability at several critical locations in the city	Entire City	Planning and Implementation
17	Develop Policies For Ensuring Our State of Storm Readiness (FD)	Develop city wide policies for ensuring our state of readiness, including frequent meetings as storms approach	Entire City	Training and Preparation

Table 15G, continued
Potential Mitigation Actions: Multiple Hazards

Meets Objective # (continued)	Name of Potential Action	Description of Potential Action	Affected Location	Type of Activity
2	Increase Direct Communications Among Departments and Non-City Entities (FD)	Increase direct communications between FD, PD and GS without having to go through individual dispatch centers	Entire City	Emergency Services
21	Conduct Hazardous Materials Operations Training For All City Departments (FD)	Conduct hazardous materials operations training for all city departments	Entire City	Training and Preparation
6	Submit a Plan For a Full-Time Position For a Dedicated Emergency Management Director/Coordinator (FD)	Submit a plan for a full-time city position for emergency management, homeland security coordinator	Entire City	Planning and Implementation
5	Conduct ICS Training For All City Departments (FD)	Conduct ICS training for all city departments	Entire City	Training and Preparation
16	Ensure Staff and Equipment Preparedness for Ice, Snow, and Wind Events (GS)	Ensure Staff and Equipment Preparedness for Ice, Snow, and Wind Events	Entire City	Planning and Implementation
7	Continue to Maintain Zoning Setback Regulations for Tall Structures (CD)	Setbacks help protect adjacent buildings and property in case of collapse of tall structures.	Entire City	Life and Property Protection
5	Update the 2005 Emergency Operations Plan (FD)	City of Concord Emergency Operations Plan was adopted 2005. Have Department specific annexes. Updated about every two years. The EOP is scheduled for an update.	Entire City	Planning and Implementation
6	Undertake More Tabletop Exercises (FD)	All hazards exercise drills. Have completed several full scale drills, but in the last few years have been focusing on table top and functional drills. Last full scale drill may have been State House dirty bomb scenario in 2008. Include plane crash procedures.	Entire City	Training and Preparation
6	Update General Orders for Procedures as Needed (PD)	Many were last updated years ago (see Table 12B) and should be reviewed to ascertain the need for revision. Every PD general must be reviewed and updated as needed.	Entire City	Planning and Implementation

Source: Concord Hazard Mitigation Task Force 2011

CHAPTER 10. EVALUATION AND IMPLEMENTATION OF ACTIONS

2011 PLAN UPDATE

The new mitigation strategies which were identified in **CHAPTER 9. NEWLY IDENTIFIED MITIGATION ACTIONS** and the relevant 2007 actions have been placed into one of five tables categorized by the type of activity, **Tables 17A - 17E**. A few older actions remain which did not have respective discussion and appearance in the 2007 Newly Identified Mitigation Actions Chapter. All actions were prioritized using the STAPLEE method below, and new costs, timeframes, and rationales were identified. An updated cost-benefit analysis was developed. Actions from 2007 which have not been completed have been indicated as **DEFERRED**. The **COMPLETED** Actions of the Plan are now documented in **Table 16**, and the **DELETED** Actions are documented in **Table 16A**.

INTRODUCTION

The Hazard Mitigation Task Force ranked each of the new or improved mitigation strategies by utilizing the following criteria. The Task Force asked and then answered such questions as "Does the action reduce damage?", "Does the action contribute to Town objectives?", "Is the action socially acceptable", and "Does the action offer reasonable benefits compared to its cost in implementing?"

The following list documents the questions (criteria) that were posed to the Task Force. The Task Force responded to these and other questions, with a numeric score of "1" (indicating poor/no), a "2" (indicating average/maybe), and a "3" (indicating good/yes).

- Does the action reduce damage and human losses?
- Does the action contribute to community objectives?
- Does the action meet existing regulations?
- Does the action protect historic structures?
- Can the action be implemented quickly?
- Is the action socially acceptable?
- Is the action technically feasible?
- Is the action administratively possible?
- Is the action politically acceptable?
- Is the action legal?
- Does the action offer reasonable benefits compared to its cost in implementing?
- Is the action environmentally sound?

The numeric answers were totaled to give a final score for each of the criteria. Those answers that totaled higher were given the higher priority. A score of 36 would indicate that the mitigation strategy, or action, received the highest possible score. The scores ranged from a high of 36 to a low of 22. The full scoring matrix is located in the **CHAPTER 12.**

APPENDIX.

The rankings are indicated in the *Priority Score* column in the Mitigation Action Plan **Tables 16A - 16E** on the following pages.

Not only are new Actions prioritized, existing Actions from 2007 are categorized into **COMPLETED**, **DELETED**, or **DEFERRED** as described in the following sections.

For tracking and informational purposes, after each *Who is Responsible* is an abbreviation of the Department, in parentheses, which proposed the Action. The abbreviations are listed below:

FD - Fire Department
 PD - Police Department
 GS - General Services
 CD - Community Development
 CD-GIS - Community Development GIS
 IS - Information Services
 TF - Mitigation Planning Task Force

STATUS OF EXISTING 2007 AND NEW 2011 ACTIONS

The Actions in the following tables were listed in the 2007 Plan. Many Actions have been **COMPLETED** and are listed in **Table 16**. The status of the remaining Actions, plus the **NEW** Actions developed by the 2010 Hazard Mitigation Committee, was addressed in this 2010 Plan in the following manner:

- | | |
|---------------------|--|
| • Completed Actions | Listed in Table 16. Mitigation Actions Implemented Since 2007 and placed in CHAPTER 8. EXISTING MITIGATION SUPPORT STRATEGIES . Indicated as COMPLETED under the Action heading |
| • Deleted Actions | Listed in Table 16A. Mitigation Actions Deleted from 2007 Plan . Indicated as DELETED under the Action heading |
| • Deferred Actions | Indicated as DEFERRED under the Action heading |
| • New Actions | Indicated as NEW under the Action heading |

Actions that were **DELETED** from the 2007 Plan are no longer relevant to the City, may not have been able to receive funding, or are no longer a priority to Concord.

Actions which were **DEFERRED** from 2007 are still important to the City but did not have the staff capability or the funding to undertake them, other Actions took higher priority, more time is required for completion, or they may need to be repeated in order to be effective. They remain in the Action Plan and have been re-prioritized with the **NEW** Actions.

Changes in priority of the 2007 Actions occurred over the last five years. The former priority of the **DEFERRED** Actions is listed in parentheses after **DEFERRED** so a comparison can be readily made.

Completed Mitigation Actions

The City has implemented several Actions identified in 2007 since the original 2007 plan was adopted. Departments have undertaken the challenges inherent in getting the Actions implemented to ensure that the City will benefit from the identified mitigation strategies. These COMPLETED Actions, are displayed in **Table 16**. Several of the mechanisms for implementing Actions include insertion into existing plans and documents, discussed in **CHAPTER 11. PLAN MONITORING, EVALUATING, AND UPDATING**.

The COMPLETED Actions are also identified in **CHAPTER 8. EXISTING MITIGATION SUPPORT STRATEGIES**, joining the other strategies, policies, plans, procedures, guidelines, training, equipment, etc. which have the potential to mitigate a hazard.

Table 16
Mitigation Actions Completed Since 2007

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
12	Locate a Backup Operation Center for Water and Wastewater Treatment Plants (IS). Sites are presently operated via remote. COMPLETED	GS	Water - in July 2010 WW - in July 2009	\$200,000	CIP
12	Create Off-Premises Data Storage for Water and Wastewater Treatment Plants (IS) COMPLETED	GS	Water - in July 2010 WW - in July 2009	Included in Backup Operation Center above	CIP
32	Review Drainage Areas of Previously Impacted Areas and Prepare Capital Plan for Mitigation of Any Potential Future Flooding (TF) COMPLETED	CD	July 2010	\$300,000	City General Fund/ Annual Operating Budget
35	Prepare a Flood Action Plan for the Wastewater Treatment Plants (GS) COMPLETED	GS	2009	Staff Time	City General Fund/ Annual Operating Budget
36	Present Revisions to Subdivision Regulations for Residential Sprinkler Systems in New Homes As Appropriate (FD) COMPLETED	CD	June 2010	Staff Time	City General Fund/ Annual Operating Budget
36	Install a Radio Transmitter at Concord Hospital (PD) COMPLETED	PD	Completed Summer 2010	\$70,000	Private Funds / City General Fund/ Annual Operating Budget
33	Enhance Security at Fire Department Facilities (FD) COMPLETED	FD	2007	\$100,000	CIP/Grants

Table 16, continued
Mitigation Actions Completed Since 2007

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
33	Develop Aquifer Protection Ordinance (CD) COMPLETED	CD	April 2010	\$15,000	City General Fund/ Annual Operating Budget
36	Provide GIS Software (CD-GIS) COMPLETED	IS	Spring 2010	Staff Time	IS Operating Budget
31	Implement TEMSIS Reporting System (FD) COMPLETED	FD	2007	Staff Time	City General Fund/ Annual Operating Budget
36	Secure Dedicated Phone Lines and Cellular Phones For Use in Emergencies (FD) COMPLETED	FD	May 2006	\$15,000	City General Fund/ Annual Operating Budget
36	Establish a System for Public Notification and Information During a Disaster (PD) COMPLETED	PD	May 2006	\$35,000	CIP
36	Develop a Coordinated Plan For Responding to Storms (FD) COMPLETED	FD	2007	Staff Time	City General Fund/ Annual Operating Budget
33	Develop a Plan to Protect the City's Data and Resources (TF) COMPLETED	IS	2011	\$50,000	City General Fund/ Annual Operating Budget
33	Establish a Relationship with an Intelligence Fusion Center (TF) COMPLETED	PD	October 2010	\$0	City General Fund/ Annual Operating Budget / Grant
33	Enhance the Asset GIS Layers to Enable Instant Database Access for Use During Emergency Response (TF) COMPLETED	CD-GIS	December 2006	\$2,000	Grants
35	Coordinate with NHTI for Emergency Sustainability (PD) through the Capital Area Public Health Network COMPLETED	PD	January 2010	Staff Time	City General Fund/ Annual Operating Budget
33	Adopt Public Health Objectives from the Capital Area Public Health Plan (TF) COMPLETED	FD	September 2009	Staff Time	City General Fund/ Annual Operating Budget

Source: Concord Hazard Mitigation Plan Update Task Force, 2011

Deleted Mitigation Actions

The City has DELETED several Actions identified in 2007 since the original 2007 plan was adopted. DELETED Actions are displayed in [Table 16A](#). DELETED Actions are no longer necessary or priorities to the City, could not be realistically undertaken, are not relevant to the City's objectives or situation, were not financially feasible, were duplicating existing efforts, or were modified and incorporated into another Action listed in the [Table 17A - 17E](#) Action Plan.

Table 16A
Mitigation Actions Deleted from the 2007 Plan

Priority Score	Action	Who is Responsible	Deleted By Date	Approx Cost*	How Funded
30	Install Remote Monitoring System at Penacook Lake Dam (PD) DELETED This Action was deleted because it was modified and incorporated into another Action.	GS	June 2011	\$5,000	Grants
24	Encourage Floodproofing of Residential Structures in the Floodplain DELETED This Action was deleted because it was not financially feasible as stated and it was modified and incorporated into another Action.	CD	June 2011	\$2.8 million	Grants
36	Incorporate Police Department Mass-Call Back (PD) DELETED This Action was deleted because it it duplicates existing efforts.	PD	June 2011	Staff and \$2,500	CIP
35	Target the Response for Accident Events on Selected Roadways (TF) DELETED This Action was deleted because it duplicates existing efforts.	PD	June 2011	Staff Time	City General Fund/ Annual Operating Budget
34	Enhance General Order on Flooding (PD) DELETED This Action was deleted because it was modified and incorporated into another Action.	PD	June 2011	Staff Time	City General Fund/ Annual Operating Budget
36	Develop 911 Public Notification Procedures (TF) DELETED This Action was deleted because it duplicates existing efforts.	PD	June 2011	Staff Time	City General Fund/ Annual Operating Budget

Table 16A, continued
Mitigation Actions Deleted from the 2007 Plan

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
35	Create Public Notification System for Wildfires (PD) DELETED This Action was deleted because it duplicates existing efforts.	FD	June 2011	\$30,000	Grants
32	Conduct ICS Training for All City Departments (FD) DELETED This Action was deleted because it was a duplicate Action.	FD	June 2011	Staff Time	In kind staff time in City General Fund/ Annual Operating Budget
35	Encourage Flood Preparedness (GS) DELETED This Action was deleted because it was modified and incorporated into another Action.	GS	June 2011	\$10,000	Grants
36	Develop a Plan for Minimizing Tree and Brush Buildup Near Utility Lines, Multi-Residential Facilities, and Private Residences Constructed on Slopes (FD) DELETED This Action was deleted because it duplicates existing efforts.	FD	June 2011	Staff Time	Private
36	Review Equipment Availability for Ice and Snow Events (GS) DELETED This Action was deleted because it was modified and incorporated into another Action.	GS	June 2011	Staff Time	City General Fund/ Annual Operating Budget
34	Identify and Plan for Ice Jams (TF) DELETED This Action was deleted because it was not relevant to the City's situation.	GS	June 2011	Staff Time	City General Fund/ Annual Operating Budget
33	Ensure that Selected Businesses Provide Emergency Plans to the City (TF) DELETED This Action was deleted because it could realistically not be undertaken.	FD	June 2011	Staff Time	City General Fund/ Annual Operating Budget

Table 16A, continued
Mitigation Actions Deleted from the 2007 Plan

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
28	Develop Buffer Regulations for Homes and Developments (FD) DELETED This Action was deleted because It duplicates existing efforts.	CD	June 2011	Staff Time	City General Fund/ Annual Operating Budget
33	Develop a Public Notification System for Significant Storms (FD) DELETED This Action was deleted because it duplicates existing efforts.	FD	June 2011	Staff Time	In kind staff time in FD Operating Budget
32	Enact Public Notification System for Floods (PD) DELETED This Action was deleted because it duplicates existing efforts.	FD	June 2011	Staff Time	In kind staff time in FD Operating Budget

Source: Concord Hazard Mitigation Plan Update Task Force, 2011

CONCORD'S MITIGATION ACTION PLAN

The Hazard Mitigation Plan Update Task Force identified mitigation actions specific to the natural hazards of flooding (all subcategories included), fire (includes fire and lightning), ice and snow, and wind events. These were the most highly ranked of the natural hazards from **CHAPTER 2. HAZARD IDENTIFICATION**, most of which could qualify for FEMA or other federal grant programs. Other natural hazards, both low- and high-ranking, were considered for their applicability and the availability of options for actions.

Locally-important actions for natural, technological, or human disasters that were planning- or response-oriented were also identified and ranked here since the Hazard Mitigation Plan is an essential tool for the City's emergency management program. The Plan would not be complete without these other actions. Funding for these projects may be available at the local level through the City budget.

The ranking in the *Priority Score* column in **Tables 17A - 17E** serves as a guideline for when the City should begin acting on the identified strategies, or Actions. The Committee then determined who would be responsible for ensuring that each action would be completed, the recommended completion date, the approximate cost for completing the action, and how the action would be funded. The Mitigation Action Plan is a comprehensive proposal designed to help the City of Concord prepare in advance for the impacts of disasters. Combined with the maps of this Hazard Mitigation Plan, the Action Plan should guide future hazard mitigation efforts.

2011 Action Plan

A total of **81** Actions that Concord can undertake were identified and prioritized. Those Actions that are listed first in each table were given the highest priority by the Hazard Mitigation Task Force:

Table 17A
Concord's Mitigation Action Plan 2011: Life and Property Protection

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
36	Encourage Continued Floodplain Regulation (CD) DEFERRED (36)	CD	May 1, 2012 - 2016*	Staff Time	City General Fund/ Annual Operating Budget
Project Rationale: Continued participation in program allows Concord property owners the ability to acquire flood insurance. The City's Ordinances include regulations that exceed those of the NFIP. In the area along the Merrimack River from the Bow town line to the breached Sewalls Falls Dam, the City adopted the recommendations of the Army Corps of Engineers and requires minimum floor elevation averaging approximately 4 feet higher than the 1999 FEMA Study. In the area along the Merrimack River above the Sewalls Falls Dam, the City requires minimum floor elevations 2 feet higher than the 1999 FEMA Study. For areas adjacent to all other water bodies that were studied, the City requires minimum floor elevations 1 foot higher than the 1999 FEMA Study. In addition, the City prohibits dwelling units from being located in the FEMA 100 year floodplain and the F1 floodplain. In 2010, the City's ordinance was reviewed by the NH Office of Energy and Planning under their Floodplain Management Program and some minor amendments were made to both the Zoning Ordinance and Building Code to maintain the City's compliance with eligibility requirements for the National Flood Insurance Program. The City's Conservation Commission continues to acquire flood prone land to protect as open space for agricultural use, recreational purposes, and wildlife habitat. This takes land out of development and spares the City from future potential flood damage. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur monthly through 2016.					
Cost Rationale: Staff time for this effort is minimal and will likely require less than 40 hours per year total. Staff labor could include tasks such as periodically reviewing regulations to insure they meet or exceed current FEMA requirements. Staff has had very preliminary discussions with FEMA regarding improving the City's insurance rating under FEMA's Community Rating System program.					
36	Maintain Building Codes to Reduce Wind Load Damage (CD) DEFERRED (36)	CD	May 1, 2012 - 2016*	Staff Time	City General Fund/ Annual Operating Budget
Project Rationale: Implementing the most current building code will help insure the latest engineering techniques and technology are used in new structures which might be susceptible to failure due to windload issues. This must be implemented within the limits of the mandated State Building Code and RSAs which limits the City's ability to adopt the most recent editions of the ICC family of codes. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur monthly through 2016.					
Cost Rationale: Staff time for this effort is minimal and will likely require less than 40 hours per year total. Staff labor could include tasks such as periodically reviewing current building codes as well as those proposed by national organizations. There should be no hard costs associated with this project.					

Table 17A, continued

Concord's Mitigation Action Plan 2011: Life and Property Protection

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
36	Secure City Hall (PD) DEFERRED (34)	City Manager	June 2013	\$25,000 + \$5,000	CIP
Project Rationale: Current facilities offer minimal to no security for the personnel assigned to work critical government functions that are frequently met by angry citizens. One incident of violence against another citizen or public servant would likely exceed the cost of security improvements. There are no secure doors. The City has been talking about panic buttons to alert the Police Department. The building is completely open and anyone can walk in uninhibited. This Action was deferred from 2007 because the City did not have the funding to undertake it.					
Cost Rationale: Hard costs for this project include a per door cost of \$2,500 for 10 doors. Panic buttons would cost \$500 for each of 10 desks. Staff time costs are not included, but staff time could range between 2 hours and 5 hours per door. Staff labor could include tasks such as working with the sub-contractor to ensure door mechanisms function properly and then upkeep of the door once done.					
36	Install Security Monitoring System of Water Treatment Facility (PD) DEFERRED (34)	GS	January 2013	\$30,000	Grants/CIP
Project Rationale: Water treatment facilities have been identified as key community infrastructure which is vulnerable to terrorist attack and other biohazards. Monitoring systems should enhance the prevention of these issues. More cameras and fencing are needed. This Action was deferred from 2007 because the City did not have the funding to undertake it.					
Cost Rationale: Hard costs for this project include video monitoring, hardware, software, plus fencing necessary to enhance perimeter security. Staff time costs are not included, but staff time could range between 5 hours and 25 hours. Staff labor could include tasks such as software training, coordinating of installation and monitoring.					
36	Install Security Monitoring System of Waste Water Treatment Facility (PD) DEFERRED (34)	GS	January 2013	\$100,000	Grants/CIP
Project Rationale: Waste water treatment facilities have been identified as key community infrastructure which is vulnerable to terrorist attack and other biohazards. Monitoring systems should enhance the prevention of these issues. Plant needs an automatic swipe card gate access and video cameras. This Action was deferred from 2007 because the City did not have the funding to undertake it.					
Cost Rationale: Hard costs for this project include the door security system, video monitoring and hardware and software necessary to enhance perimeter security. Staff time costs are not included, but staff time could range between 5 hours and 25 hours. Staff labor could include tasks such as software training, coordinating of installation and monitoring.					

Table 17A, continued

Concord's Mitigation Action Plan 2011: Life and Property Protection

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
36	Update the Zoning Ordinance to Comply with NFIP Requirements NEW	Planning Board	May 1, 2012 - 2016*	Staff Time	In-kind staff time
Project Rationale: The Zoning Ordinance needs to be updated as new requirements to the National Flood Insurance Program are necessary for retention of NFIP participation. The Floodplain Ordinance protects life and property by regulating distance of structures to flood hazard areas, regulating elevation, clarifying definitions, regulating new structures and encroachments, stating duties of the Code Enforcement Officer, etc. In 2010, the City accepted the revisions to the Floodplain Ordinance and the City Council accepted the updated maps. *The Action is anticipated to recur monthly through 2016.					
Cost Rationale: Cost is Staff Time since language is provided by the NH Office of Energy and Planning and labor is performed in-kind by staff and volunteers.					
36	Undertake Penacook Lake Dam Monitoring and Maintenance (GS) NEW	GS	October 1, 2011 - 2016*	Staff Time	In-kind staff time from GS Water Fund
Project Rationale: City's Water Supply has an emergency response plan and is subject to yearly State inspection. The location is Penacook Lake. The project is necessary because downstream residents should be protected should flooding occur. Daily the operators enter into a logbook the elevation and the observation of the flow (debris, leaves, etc), what is happening around the dam. *The Action is anticipated to recur daily through 2016.					
Cost Rationale: Cost is Staff Time since labor is performed in-kind by staff.					
35	Enhance Security to Concord High School (Non-City) (PD) DEFERRED (35)	Concord School Department	June 2013	\$100,000	Concord School District funding
Project Rationale: The security of the facility is a problem, particularly unsecured doors. Police Department would act as a consultant, but would not perform duties. Cameras should be added as part of the cost. This Action was deferred from 2007 because the City did not have the funding to undertake it.					
Cost Rationale: Hard costs would be a camera system. Staff time costs are not included, but staff time could range between 25 hours and 30 hours. Staff labor could include tasks such as identifying problem spots and then the subsequent testing of the problem areas to ensure coverage.					

Table 17A, continued

Concord's Mitigation Action Plan 2011: Life and Property Protection

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
34	Install a Surveillance System at City Facilities (IS) DEFERRED (33)	City Manager	December 2020	\$100,000	Grants/CIP
Project Rationale: Many of the current city buildings and infrastructure are not manned during off-hours and are therefore soft targets. A video surveillance system could help detect anyone that is around these structures when outside of the normal business day. City Garages, Library, City Hall, and parks and recreational areas would benefit. This Action was deferred from 2007 because the City did not have the funding or staff capability to undertake it.					
Cost Rationale: Hard costs for this project include video surveillance cameras and secure door locks with key code access. Staff time costs are not included, but staff time could range between 20 hours and 25 hours per building. Staff labor could include tasks such as identifying the areas that need hardening and then working with the sub-contractor to implement the necessary security upgrades as well as the maintenance after installation.					
33	Enhance Security at Memorial Field (PD) DEFERRED (30)	GS	January 2015	\$30,000	CIP/Grants
Project Rationale: Memorial Field is a large athletic field where numerous local sporting events take place. The field is easily accessible and is an area where large numbers of people can congregate for these sporting events. This Action was deferred from 2007 because the City did not have the funding or staff capability to undertake it.					
Cost Rationale: Hard costs for this project include fencing around these public areas to limit access to these public structures and the installation of video camera surveillance.					
33	Improve Building Security of Beaver Meadow Golf Course (Non-City) (GS) DEFERRED (29)	Parks and Recreation	January 2015	\$25,000	CIP
Project Rationale: Beaver Meadow is a historic landmark. The Police Department takes many calls for vandalism. Parks and Recreation will seek to coordinate with Beaver Meadow Golf Course on this project. This Action was deferred from 2007 because the City did not have the funding or staff capability to undertake it.					
Cost Rationale: Hard costs for this project include four camera locations and monitors. Staff time costs are not included, but staff time could range between 5 hours and 15 hours. Staff labor could include tasks such as purchase and installation of the equipment, and monitoring.					
33	Undertake Roadway Monitoring and Maintenance Caused by City Dams (GS) NEW	GS	May 1, 2012 - 2016*	Staff Time	In-kind staff time from GS Operating Budget
Project Rationale: The City's responsibility is to monitor and address any deficiencies to mitigate roadway damage of the other 1-2 dams licensed by the City. Locations are Sheep Davis Road and Appleton Street. *The Action is anticipated to recur monthly through 2016.					
Cost Rationale: Cost is Staff Time since labor is performed in-kind by staff.					

Table 17A, continued

Concord's Mitigation Action Plan 2011: Life and Property Protection

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
32	Enhance Security at Unutil Substations (Non-City) (PD) DEFERRED (29)	EMD & Unutil Facilities Director	April 2012	\$200,000	Unutil & Homeland Security Grants
<p>Project Rationale: Unutil provides the electrical power for the City of Concord and is a key piece of infrastructure. They have several different substations throughout the city. Unutil will undertake a joint effort with the City. There are 13 substations in Concord. The City would likely not monitor the substations. Although this is not a City Action, it was deferred from 2007 because there was no funding or staff capability to undertake it.</p> <p>Cost Rationale: Hard costs for this project include fencing and video equipment, T line. Each substation could cost about \$15,000. These costs should not be borne by the City.</p>					
30	Continue to Maintain Zoning Setback Regulations for Tall Structures (CD) DEFERRED (36)	CD	May 1, 2012 - 2016*	Staff Time	City General Fund/ Annual Operating Budget
<p>Project Rationale: Setbacks help protect adjacent buildings and property in case of collapse of tall structures. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur monthly through 2016.</p> <p>Cost Rationale: Staff time for this effort is minimal and will likely require less than 40 hours per year total. Staff labor could include tasks such as periodically reviewing current regulations as compared to sample regulations developed by national planning organizations. There should be no hard costs associated with this project.</p>					
30	Develop a Sprinkler Ordinance for the Conflagration Areas (PD) DEFERRED (31)	CD	December 2015	\$3 million	Private Funds / City General Fund/ Annual Operating Budget
<p>Project Rationale: These properties are both commercial and residential in a congested conflagration zone. Sprinklers have a documented history of saving lives and property. Also, these structures have substantial historical significance to the community. The economic devastation from a conflagration on Main Street would far exceed the cost of installation of sprinklers in the buildings. This Action was deferred from 2007 because the City did not have the funding to undertake it.</p> <p>Cost Rationale: Hard costs for this project include educational components, design and development of individual buildings but will not be borne by the City. Staff time costs are not included, but staff time could run 1,000 hours or more. Staff labor could include tasks such as project management and implementation.</p>					
29	Update Stormwater Management System at Bow Brook and South Street and Sunset Avenue NEW	GS	FY-2013	\$118,325	CIP
<p>Project Rationale: Problem is 48" (South Street) and 12" (Sunset Ave) pipes are undersized for flow from the South Street area. Solution is existing 24" overflow discharges to brook south of this outlet. May have already resolved this issue. Installation includes new 24" RC pipe for 300 LF and 18" PVC for 125 LF. In the City's CIP for FY-2013.</p> <p>Cost Rationale: Cost is \$118,325 for materials and labor.</p>					

Table 17A, continued

Concord's Mitigation Action Plan 2011: Life and Property Protection

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
29	Update Stormwater Management System at Concord Heights NEW	GS	FY-2015	\$514,690	CIP
Project Rationale: Small dia. pipes at Nodes "U", "W" and "AA". Problem is 24" thru 12" dia. pipes undersized for 10-year storm. Solution is Consider replacing pipes with large dia. pipes. Installation includes new 36" RC pipe for 560 LF, 30" RC pipe for 930 LF. In the City's CIP for FY-2015.					
Cost Rationale: Cost is \$514,690 for materials and labor.					
29	Update Stormwater Management System at Ormond St, Christian Ave, Oriole Rd, East Side Dr and Partridge Rd NEW	GS	FY-2015	\$2,198,174	CIP
Project Rationale: Small dia. pipes along Ormond St. Christian Ave, Oriole Rd, East Side Dr and Partridge Rd. Problem is 12" and 15" dia. pipes undersized for 10-year storm. Solution is Consider more detailed study of drainage area and replace pipes with larger dia. pipes. Installation includes new 54" RC pipe for 1,305 LF, 48" RC pipe for 940 LF, 42" RC pipe for 1,145 LF, 30" RC pipe for 605 LF, 24" RC pipe for 500 LF and 18" PVC pipe for 925 LF. In the City's CIP for FY-2015.					
Cost Rationale: Cost is \$2,198,174 for materials and labor.					
29	Update Stormwater Management System at West Sugarball Road to Outfall on Merrimack River NEW	GS	FY-2010	\$146,960	CIP
Project Rationale: Problem is severe washout and erosion. Solution is to repair/reconstruct drainage outfall. Installation of new 36" RC pipe for 400 LF and repair existing outfall structure. In the City's CIP for FY-2010.					
Cost Rationale: Cost is \$146,960 for materials and labor.					
29	Update Stormwater Management System at Concord Hospital, South of Redington Road/West of Fruit Street NEW	GS	FY-2013	\$603,900	CIP
Project Rationale: South of Redington Road, west of Fruit Street, 30" pipe. Problem is flat area has poor drainage. Solution is to consider installing larger pipes. Installation of new 42" RC pipe for 1,500 LF. In the City's CIP for FY-2013.					
Cost Rationale: Cost is \$603,900 for materials and labor.					

Table 17A, continued

Concord's Mitigation Action Plan 2011: Life and Property Protection

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
29	Update Stormwater Management System at Charles Street and Contoocook River NEW	GS	FY-2015	\$63,580	CIP
Project Rationale: Problem is 12" pipe is undersized. Solution is detention, storage, or increase in pipe size. Installation of new 24" RC pipe for 200 LF. In the City's CIP for FY-2015.					
Cost Rationale: Cost is \$63,580 for materials and labor.					
29	Update Stormwater Management System at Pleasant Street and Miller's Brook NEW	GS	FY-2014	\$22,044	CIP
Project Rationale: Problem is undersized culvert causing backups. Solution is to consider culvert replacement or storage/retention. Installation of new 36" RC pipe for 60 LF.					
Cost Rationale: Cost is \$22,044 for materials and labor.					
29	Update Stormwater Management System at Merrimack Street and Bye Street NEW	GS	FY-2015	\$614,020	CIP
Project Rationale: Problem is 12" pipes are undersized and illicit sewer connection. Solution is detention, storage, or increase in pipe size along with separating sewer connection. Installation of new 30" RC pipe for 1,000 LF and 42" RC pipe for 700 LF. In the City's CIP for FY-2015.					
Cost Rationale: Cost is \$614,020 for materials and labor.					
29	Update Stormwater Management System at Tanner Street and Village Street (Penacook) NEW	GS	FY-2015	\$337,205	CIP
Project Rationale: Problem is 15" and 12" pipes are undersized. Solution is detention, storage, or increase in pipe size. Installation of new 24" RC pipe for 700 LF and 48" RC pipe for 250 LF. In the City's CIP for FY-2015.					
Cost Rationale: Cost is \$337,205 for materials and labor.					

Table 17A, continued

Concord's Mitigation Action Plan 2011: Life and Property Protection

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
29	Update Stormwater Management System at Noyes Street near Harvard Street NEW	GS	FY-2013	\$63,580	CIP
Project Rationale: Problem is 18" pipe undersized. Solution is to reduce flow through retention or storage; or replace with a larger pipe. Installation of new 24" RC pipe for 200 LF. In the City's CIP for FY-2013.					
Cost Rationale: Cost is \$63,580 for materials and labor.					
29	Update Stormwater Management System at Rumford Street between Penacook Street and Jennings Street NEW	GS	FY-2014	\$148,225	CIP
Project Rationale: Problem is undersized 8" diameter pipe from large area to Walker St. Solution is to consider pipe replacement. Installation of new 15" PVC pipe for 550 LF.					
Cost Rationale: Cost is \$148,225 for materials and labor.					
29	Update Stormwater Management System at Low Area at Borough, Washington and Fowler Triangle NEW	GS	FY-2016	\$424,050	CIP
Project Rationale: Problem is low area in neighborhood experiences severe flooding in heavy rain and spring conditions. Solution is to install new drainage pipes and outfalls or drywells for an immediate solution. Installation of new 12" and 15" PVC drainage for 1000 LF and 24" RC pipe for 500 LF.					
Cost Rationale: Cost is \$424,050 for materials and labor.					
26	Upgrade Radio System in Merrimack Valley High School (Non-City) (PD) DEFERRED (35)	PD and Merrimack Valley School System	December 2013	\$20,000	Private Funds / City General Fund/ Annual Operating Budget (in-kind)
Project Rationale: There is no communication with the officer at the high school because the areas in the building are "dead zones". In case there is an incident, it is important to be able to communicate with officers. This Action was deferred from 2007 because the City did not have the funding or staff capability to undertake it.					
Cost Rationale: Hard costs for this project include radial cable and a VHF bi-directional amplifier as well as the labor to install the system. The cost will not be borne by the City. Staff time costs are not included, but staff time could range between 15 hours and 20 hours. Staff labor could include tasks such as identifying problem spots in the school and then subsequent testing of the problem areas.					

Sources: CHAPTER 9. NEWLY IDENTIFIED MITIGATION ACTIONS, Hazard Mitigation Update Task Force 2011

Table 17B
Concord's Mitigation Action Plan 2011: Emergency Services

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
36	Enhance Security System of Police Headquarters (PD) DEFERRED (36)	PD	June 2013	\$15,000	Grants
Project Rationale: The only security measure accomplished is fencing around the parking lot. The Police Department has hardened itself as a target, but still requires controlled access doors and video equipment to further enhance this objective. This Action was deferred from 2007 because the City did not have the funding to undertake it.					
Cost Rationale: Hard costs for this project include door control access and video equipment as well as the labor to install them.					
35	Increase Direct Communications Among Departments and Non-City Entities (FD) DEFERRED (36)	Emergency Management Director	July 1, 2012 - 2016*	Staff Time	City General Fund/ Annual Operating Budget
Project Rationale: Information fusion networks increase information and intelligence sharing, thus enhancing prevention, deterrence and mitigation of incidents related to natural and human made disasters. The Departments receive the old radios as the Fire Department obtains new radios. The FD is hoping to establish an Emergency Planning Committee. The FD is hoping to undertake drills on hazardous materials or natural hazards for apartment complexes and other private resources. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur annually through 2016.					
Cost Rationale: Staff time could range between 15 hours and 100 hours per year per department. Staff labor could include time necessary to organize such an endeavor. There should be no hard costs associated with this project.					
35	Maintain Municipal Fire Alarm and Fiber Optic Network (FD) DEFERRED (35)	FD	July 1, 2012 - 2016*	Annual Costs of \$50,000 to \$100,000	FD Operating Budget
Project Rationale: The Municipal Fire Alarm and Fiber Optic Network has become a critical asset in the day to day delivery of city services and the ability of the community to respond to and mitigate emergency incidents. The network is a platform for city office phone service and much of the wireless communications infrastructure. The division was cut 50% two years ago in 2009 to present costs. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur monthly through 2016.					
Cost Rationale: Hard costs for this project include \$50-\$100,000 annually to maintain the existing system, including cable replacement. Staff time and benefits include about \$80,000, and supplies are about \$20-25k. Staff labor includes tasks such as management, maintaining the system, upgrades, etc.					

Table 17B, continued
Concord's Mitigation Action Plan 2011: Emergency Services

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
34	Develop Fire Dispatch Back-up Plan (FD) DEFERRED (34)	FD	June 2011	\$20,000	Interoperability Communication Grant Program
Project Rationale: A nearby transportation accident, hazardous materials incident, or a fire or similar emergency within the Dispatch Communications Center would cause the Center to cease operation, putting the lives and property of members of nineteen communities at risk. Currently there is no back up dispatch center. The consequence of a capital area fire and emergency medical services communication shutdown would be catastrophic. Fire Department will have full interoperability with Lakes Region Communications Center. This Action was deferred from 2007 because the City did not have the funding to undertake it.					
Cost Rationale: Grant can cover the cost to write the plan, undertake desktop exercise, and undertake tabletop training.					
31	Continue to Update Contact Information for Ice Storm Response (GS) NEW	GS	September 1, 2011 - 2016*	Staff Time	In kind staff time in GS Operating Budget
Project Rationale: On-call Highway foremen mobilize staff to respond appropriately. General Services will work with other emergency personnel, including Police, Fire, Unitil Electric. Information should be revised on an annual basis. This project is necessary to ensure the timely response of personnel. *The Action is anticipated to recur annually through 2016.					
Cost Rationale: Cost is Staff Time since labor is performed in-kind by staff and volunteers.					
29	Maintain Dispatch Software and Hardware to Allow For AVL Capability and Priority Dispatching (FD) DEFERRED (35)	FD	December 2013	\$150,000	CIP
Project Rationale: This technology is used to enhance firefighter safety by maintaining live time data about a unit's actual location. It also reduces response time by identifying which response unit is closer to the emergency. Reduced response time reduces medical and fire damage costs and human morbidity and mortality. The AVL system is not the priority at this time because the City does not currently have the mapping platform to do AVL. This Action was deferred from 2007 because the City did not have the funding or staff capability to undertake it.					
Cost Rationale: Hard costs for this project include hardware, software, implementation, and testing. Staff time costs are not included, but staff time could range between 100 hours and 200 hours. Staff labor could include tasks such as program management, data entry, beta testing.					

Table 17B, continued
Concord's Mitigation Action Plan 2011: Emergency Services

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
24	Enhance the Security of WKXL (PD) DEFERRED (30)	PD	January 2012	Staff Time	PD Operating Budget / Private Funds
Project Rationale: This radio station can serve to send out a message to the public during a natural or unnatural event. The Police Department will seek to develop a MOU with this station as well as policies and procedures for the implementation of the message. No MOU is currently on file with the Police Department. This Action was deferred from 2007 because it was a private Action to be paid for by a non-City entity.					
Cost Rationale: Staff time could range between 20 hours and 25 hours. Staff labor could include tasks such as coordinating efforts with the station representatives and methods of access to this station during off hours. There should be no hard costs to the City associated with this project.					
24	Enhance the Security of WNHI (PD) DEFERRED (30)	PD	January 2012	Staff Time	In kind staff time in PD Operating Budget / Private Funds
Project Rationale: This radio station can serve to send out a message to the public during a natural or unnatural event. The Police Department will seek to develop a MOU with this station as well as policies and procedures for the implementation of the message. No MOU is currently on file with the Police Department. This Action was deferred from 2007 because it was a private Action to be paid for by a non-City entity.					
Cost Rationale: Staff time could range between 20 hours and 25 hours. Staff labor could include tasks such as coordinating efforts with the station representatives and methods of access to this station during off hours. There should be no hard costs associated with this project.					

Sources: CHAPTER 9. NEWLY IDENTIFIED MITIGATION ACTIONS, Hazard Mitigation Update Task Force 2011

Table 17C

Concord's Mitigation Action Plan 2011: Public Information and Involvement

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
25	Develop NFIP Public Awareness Program and Publicize the Availability of Flood Insurance (TF) DEFERRED (32)	CD	May 1, 2012 - 2016*	Staff Time	In kind staff time in City General Fund/ Annual Operating Budget
<p>Project Rationale: Program can help those who may be vulnerable to a flood situation be aware of how they may be able to procure flood insurance to cover their losses. Many residents may be unaware of their ability to purchase flood insurance, which is available to anyone in City regardless of whether they are located in a Special Flood Hazard Area. The City will include information and a link on the City website and have brochures available. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur monthly through 2016.</p>					
<p>Cost Rationale: Staff time could range between 10 hours and 100 hours. Staff labor could include tasks such as establishing target audience and development and delivery of public education plan associated with the project. There should be no hard costs associated with this project.</p>					

Sources: CHAPTER 9. NEWLY IDENTIFIED MITIGATION ACTIONS, Hazard Mitigation Update Task Force 2011

Table 17D

Concord's Mitigation Action Plan 2011: Training and Preparation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
36	Require Incident Command System (ICS) Training for City Personnel (PD) DEFERRED (36)	FD	September 2011	Staff Time	In kind staff time in City General Fund/ Annual Operating Budget
Project Rationale: Homeland Security Presidential Directive 5 mandates that First Responders be trained in Incident Command System in accordance with the National Incident Management System. Training all city personnel will enable better response to natural and unnatural events. A course is being organized by NHHSEM is scheduled for September 2011. Those trained would most likely be involved with the activation of the EOC. This Action was deferred from 2007 because the City did not have the staff capability to undertake it.					
Cost Rationale: Staff time could range between 80 hours and 100 hours initially and then yearly updates and refresher training. Staff labor could include tasks such as training and updating policies and procedures.					
36	Execute Mock Drills for Civil Disturbances (PD) DEFERRED (34)	PD	December 2013 - 2016*	\$30,000	Homeland Security Grant
Project Rationale: The City of Concord would benefit from executing drills related specifically to large civil disturbances. Large civil disturbances would test or policies and procedures as well as any MOU's with other governmental and non-governmental agencies. This would be a coordinated effort with the State Police and Central NH Special Operations Unit and other tactical units. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective, and the City did not have the funding to undertake it. *The Action is anticipated to recur annually through 2016.					
Cost Rationale: Hard costs for this project include cost of personnel overtime for the actual drill and the preparation for the drill. Cost depends on the scope of involvement.					
34	Develop Policies for Ensuring Our State of Storm Readiness (FD) DEFERRED (36)	FD	June 2012	Staff Time	In kind staff time in FD Operating Budget
Project Rationale: It is essential that all backup and redundant systems are up and running at 100%. Policies will include station procedures on generators, fuel and water supplies, emergency supplies, etc. The FD regularly develops after-action reports. A National procedures guide has been used to structure the City's policies. Written policies are not completed at this time. Unitil would be a partner in the policy development. This Action was deferred from 2007 because the City did not have the staff capability to undertake it.					
Cost Rationale: Staff time could range between 70 hours and 100 hours. Staff labor could include tasks such as initial development and follow through to make sure policies are up to date. There should be no hard costs associated with this project.					

Table 17D, continued

Concord's Mitigation Action Plan 2011: Training and Preparation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
33	Undertake More Tabletop Exercises (FD) NEW	FD	December 2012	Staff Time	In kind staff time in FD Operating Budget
Project Rationale: The City has completed several full scale drills, but in the last few years Departments have been focusing on table top and functional drills. The last full scale drill may have been the State House dirty bomb scenario in 2008. The Emergency Planning Committee can assist. Drills to undertake should include all hazards exercise drills, highrise evacuation with hazardous materials, mass casualty, plane crash procedures, and weather-related events drills.					
Cost Rationale: Cost is Staff Time since labor is performed in-kind by staff and volunteers.					
32	Maintain GIS Software to Utilize Hazard Mitigation Maps in Emergency Response Vehicles (TF) DEFERRED (36)	CD	July 1, 2012 - 2016*	Staff Time	In kind staff time in CD Operating Budget
Project Rationale: The ability to quickly access digital mapping from the scene of an emergency by responders will substantially improve the agencies' ability to mitigate an incident. Engineering currently gets the updates for the software. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur annually through 2016.					
Cost Rationale: Hard costs for this project include acquisition of the necessary infrastructure. Staff time costs are not included, but staff time could range between 15 hours and 100 hours. Staff labor could include tasks such as grant application and project management. *The Action is anticipated to recur quarterly through 2016.					
32	Execute Mock Drills for Technological Disasters (IS) DEFERRED (36)	PD	June 2013	\$50,000+	Homeland Security Grant
Project Rationale: The City of Concord would benefit from executing drills related specifically to technological disasters. These disasters task the ability of response personnel to work within a limited infrastructure. Grant is 100% funded, but a lot of work is required to plan and implement. Unifil would be a partner in the drills. . This Action was deferred from 2007 because the City did not have the funding to undertake it.					
Cost Rationale: Hard costs for this project include setting up a plan and researching methods of communicating and effectively working within an ICS system when a technological disaster occurs. Staff time costs are not included, but staff time could range between 75 hours and 100 hours.					

Table 17D, continued

Concord's Mitigation Action Plan 2011: Training and Preparation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
32	Require NIMS Training for All Key Staff (GS) DEFERRED (31)	GS	June 2013	\$5,000	Homeland Security Grants
Project Rationale: Proper training in the methodology of incident command protocol will offer a unified response in times of critical need. This Action was deferred from 2007 because the City did not have the funding or staff capability to undertake it.					
Cost Rationale: Hard costs for this project include training classes and seminars off site, hard copy materials and training software. Staff time costs are not included, but staff time could range between 50 hours and 100 hours. Staff labor could include tasks such as time for training.					
32	Develop Coordinated Response to NH Military Reservation Emergencies (PD) DEFERRED (35)	PD	June 2013 - 2016*	Staff Time	In kind staff time in PD Operating Budget
Project Rationale: The New Hampshire National Guard Armory is located within the city limits. The Police Department has specific policies regarding response to this facility. The City should work together with the NH National Guard to develop MOUs and procedures to establish a coordinated effort for an event at this facility. In May 2010, an exercise was undertaken. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective, and the City did not have the staff capability to undertake it. *The Action is anticipated to recur bi-annually through 2016.					
Cost Rationale: Staff time could range between 35 hours and 45 hours. Staff labor could include tasks such as MOU's, written policies, and working with National Guard personnel to ensure policies and procedures do not conflict with each other. There should be no hard costs associated with this project.					
29	Conduct Hazardous Materials Operations Training for All City Departments (FD) DEFERRED (36)	FD	December 2013	Staff Time	In kind staff time in City General Fund/ Annual Operating Budget
Project Rationale: Hazardous Materials incidents require special training for first responders in order to minimize injury to the public and to other responders. HMO is a nationally accepted curriculum providing basic skills necessary to remove citizens from harm's way and establish and defend a hot zone until a haz mat team can respond. This initiative will reduce the probability of responders being injured while operating at fixed facility and transportation sector accidents. General Services will be a partner. This Action was deferred from 2007 because the City did not have the staff capability to undertake it.					
Cost Rationale: Staff time could include a class for City division and department heads and supervisors. Staff labor could include tasks such as undergoing training. Some cost will be borne for overhead materials and associated expenses. There should be no hard costs associated with this project.					

Table 17D, continued
Concord's Mitigation Action Plan 2011: Training and Preparation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
25	Participate in NFIP Training NEW	Director of Building Services	July 1, 2012 - 2016*	Staff Time	In kind staff time in CD Operating Budget
Project Rationale: In order for Planning Board members and the Director of Building Services to remain current with NFIP procedures and policies, regular training must be taken. Workshops are offered by the State and/or FEMA (or in other training) and addresses flood hazard planning and management. Director of Building Services and the building inspection staff, and the Planning Board should take the workshops. *The Action is anticipated to recur annually through 2016.					
Cost Rationale: Cost is Staff Time for the workshops, and volunteer time and staff time is in-kind labor.					
24	Develop Coordinated Response to NH State Prison Disturbance (PD) DEFERRED (32)	PD	December 2013	Staff Time	In kind staff time in PD Operating Budget
Project Rationale: The New Hampshire State Prison is a possible volatile infrastructure within the City of Concord. Coordination with the State Prison officials and NH State Police, SWAT, ERTs, and SOUs will help ensure that there is no duplicative effort and will assist with the safety and security of both those incarcerated and the citizens of the City. This Action was deferred from 2007 because the City did not have the staff capability to undertake it.					
Cost Rationale: Staff time could range between 15 hours and 25 hours. Staff labor could include tasks such as reviewing existing policies and Memorandums of Understanding. There should be no hard costs associated with this project.					
23	Provide Ongoing GIS Training (CD-GIS) DEFERRED (32)	CD-GIS	April 1, 2012 - 2016*	Staff Time	In kind staff time in Department Operating Budget
Project Rationale: As part of the IS's on-going training program, add basic and advance GIS workshops to include non-GIS staff who require a higher level understanding of GIS functionality that has been become key aspect of their duties. Note: CD-GIS staff will identify the requirements for the workshops to bring end-users up to speed. Basic training is available through CD-GIS. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur annually through 2016.					
Cost Rationale: Hard costs for this project include annual workshops. Staff time costs are not included, but staff time could range between 2 hours and 5 hours annually per City employee. Staff labor could include tasks such as writing specification for an RFP, review vendor responses and scheduling workshops.					

Sources: CHAPTER 9. NEWLY IDENTIFIED MITIGATION ACTIONS, Hazard Mitigation Update Task Force 2011

Table 17E

Concord's Mitigation Action Plan 2011: Planning and Implementation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
36	Develop and Implement a Response Plan for Special Operations Incidents (FD) DEFERRED (36)	FD	June 2012	Staff Time	In kind staff time in City General Fund/ Annual Operating Budget
Project Rationale: NFPA 1710 requires such an operational plan because it enhances the consistency of the special response operations. It also bases response on a risk management plans reducing the likelihood of injuries to responders. This was identified by the city's insurer as a needed improvement. Reduced risks to responders will reduce costs to the community. Doing this currently in April 2011. Budget goal for 2011, will lapse into 2012. This Action was deferred from 2007 because the City did not have the staff capability to undertake it.					
Cost Rationale: Staff time could range between 40 hours and 80 hours. Staff labor could include tasks such as program development, and educational components. There should be no hard costs associated with this project.					
33	Maintain Road and Driveway Slope Standards (CD) DEFERRED (36)	CD	July 1, 2012 - 2016*	Staff Time	In kind staff time in City General Fund/ Annual Operating Budget
Project Rationale: It is important that driveways have acceptable slopes and geometry in order to allow emergency response vehicles to access properties easily and quickly in order to better protect life and property. The 2010 subdivisions regulations expand upon that. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur annually through 2016.					
Cost Rationale: Staff time is minimal as City already has these regulations in place.					
33	Update the 2005 Emergency Operations Plan (FD) NEW	EMD	June 2012	Staff Time	FD Operating Budget
Project Rationale: City of Concord Emergency Operations Plan was adopted 2005. Have Department specific annexes. Updated about every two years. The EOP is scheduled for an update.					
Cost Rationale: Cost is Staff Time since labor is performed in-kind by staff and volunteers.					
32	Update GIS Critical Facilities Layer (CD-GIS) DEFERRED (36)	CD-GIS	July 1, 2012 - 2016*	Staff Time	In kind staff time in City General Fund/ Annual Operating Budget
Project Rationale: The GIS layers have already been developed by the Central NH Regional Planning Commission, but need to be imported into the City systems. This will make all the work that went into creating this Hazard Mitigation Plan much more accessible and usable when it comes time to act in a real emergency. . This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur annually through 2016.					
Cost Rationale: Staff time could range between 8 hours and 40 hours. Staff labor could include tasks such as setting up the geodatabase on SQL/SDE, importing all the data layers and symbolizing and setting up the customized layers for the users. There should be no hard costs associated with this project.					

Table 17E, continued

Concord's Mitigation Action Plan 2011: Planning and Implementation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
32	Devise Badge System for City Facilities (IS) DEFERRED (36)	PD	December 2013	\$250,000	Grants/CIP
Project Rationale: The city buildings need to have controlled access. A security badging system will control and track access of personnel in and out of buildings providing for a higher degree of security and accountability. This will also allow for consistent identification of City employees who may otherwise have trouble coming into an event to assist. About \$2,500 per door including badges and computer program, install. If all City facilities participated the same way, the main entrances would be keyed. 100 doors is an estimate. This Action was deferred from 2007 because the City did not have the funding to undertake it.					
Cost Rationale: Hard costs for this project include the cost of door locks, card material, and computer systems needed to operate and maintain the system. Staff time costs are not included, but staff time could range between 20 hours and 30 hours per year.					
32	Implement a Sprinkler Program at Concord and Royal Gardens (FD) DEFERRED (35)	FD	December 2015	\$750,000 to multi-million dollars	Private Funds/ HUD Grants
Project Rationale: These multifamily, low-income apartment complexes have been the site of multiple catastrophic fires, and have experienced significant fatalities, injuries, and high dollar loss. Buildings were built in the 1960s and 1970s with no fire suppression equipment and little fire protection equipment. The owners of the multifamily complex will be sought as partners on the project. There are twenty-seven buildings with 6-10 units in each. Unlikely that FD can require them to do this, economics climate is not good either. This Action was deferred from 2007 because it was a private Action to be paid for by a non-City entity.					
Cost Rationale: Hard costs for this project include planning and designing per consultant, retrofitting the buildings, upkeep and maintenance, materials and installation, but will not be borne by the City. Staff time costs are not included, but staff time could range between 200 hours and 400 hours. Staff labor could include tasks such as some planning, inspection, and education.					
32	Develop a Plan to Protect City Clerk's Records (TF) DEFERRED (34)	City Clerk	December 2013	\$100,000	City General Fund/ Annual Operating Budget
Project Rationale: Develop a plan deal with the record cleansing, scanning and storage of existing while defining the steps to capturing newly created records and the process of retrieving these records. An initiative occurred to look into City Clerk and Planning storage. IT will be a partner This Action was deferred from 2007 because the City did not have the funding and staff capability to undertake it.					
Cost Rationale: Staff time could range between 200 hours and 500 hours. Staff labor could include tasks such as reviewing, evaluating and drafting a plan of action. There should be no hard costs associated with this project.					

Table 17E, continued

Concord's Mitigation Action Plan 2011: Planning and Implementation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
32	Implement an Updated Fire Alarm System Program at All Multifamily Developments (FD) DEFERRED (30)	FD	December 2015	\$3-5 million	Private Funds / Grants
Project Rationale: Multifamily apartment complexes have been the site of catastrophic fires, and have experienced significant fatalities, injuries, and high dollar loss. Many buildings were built in the 1960s and 1970s with no fire suppression equipment and little fire protection equipment. The owners of the multifamily complexes and Community Development Department will be sought as partners on the project. This Action was deferred from 2007 because it was a private Action to be paid for by non-City entities.					
Cost Rationale: Hard costs for this project include planning and designing per consultant, retrofitting the buildings, upkeep and maintenance, materials and installation, but will not be borne by the City. Staff time costs are not included, but staff time could range between 120 hours and 125 hours. Staff labor could include tasks such as some planning, inspection, and education.					
32	Develop Windstorm Preparation Procedures NEW	FD	June 2012	Staff time	FD Operating Budget
Project Rationale: Incorporate Windstorm Preparation Procedures into Fire Department procedures through adoption of the model. Following February 2010 windstorm, the after action report reported a number of steps to improve emergency response procedures and the recommended adoption of model procedures which align with best practices for storm response.					
Cost Rationale: Cost is Staff Time since labor is performed in-kind by staff and volunteers.					
32	Update General Orders for Procedures as Needed (PD) NEW	PD	June 2016	\$40,000 - \$50,000	PD Operating Budget
Project Rationale: Many were last updated years ago (see Table 12B) and should be reviewed to ascertain the need for revision. Every PD general order must be reviewed and updated as needed. Currently in the process, about a 3-4 year project.					
Cost Rationale: Cost is Staff Time since labor is performed in-kind by staff and volunteers.					
31	Adopt the Capital Area Public Health Plan and Mass Vaccination Plan (TF) DEFERRED (36)	PD/FD	December 2011	Staff Time	In kind staff time in City General Fund/ Annual Operating Budget
Project Rationale: This project sets up a protocol and plan for vaccination or providing health related services to a large number of people. The staff of the Capital Area Public Health Network updated the previous plan. The Regional Coordinating Council agreed to follow the plans. The City Council needs to adopt this new Plan. This Action was deferred from 2007 because the Plan is new and needs to be readopted.					
Cost Rationale: Staff time could range between 15 hours and 25 hours a year once the plan is accepted and implemented. Staff labor could include tasks such as planning for traffic and person flow as well as security issues. There should be no hard costs associated with this project.					

Table 17E, continued

Concord's Mitigation Action Plan 2011: Planning and Implementation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
31	Enhance or Relocate the City's EOC (FD) DEFERRED (33)	All	December 2015	\$1.5 million	CIP/Grants
Project Rationale: The current EOC does not meet standards for a facility that provides coordination and management of large scale incidents. If the EOC goes down during an incident, the costs to mitigate the incident will likely increase. May involve purchasing land and constructing a building. This Action was deferred from 2007 because the City did not have the funding to undertake it.					
Cost Rationale: Hard costs for this project include facility renovations, hardware and software. Staff time costs are not included, but staff time could be upwards of 200 hours. Staff labor could include tasks such as development, planning, implementation, testing, and evaluation.					
31	Maintain a Contingency Plan for City Hall Operations (TF) DEFERRED (31)	City Manager	June 2012	Staff Time	FD Operating Budget
Project Rationale: City Hall is the hub of operations for the City. It is imperative that an alternate plan be devised for continued operation of the City in the event City Hall is unable to function. This Action was deferred from 2007 because the City did not have the staff capability to undertake it.					
Cost Rationale: Staff time could range between 40- 80 hours. Staff labor could include tasks such as identifying public buildings, writing the plan, and reviewing and testing the plan. There should be no hard costs associated with this project.					
31	Improve an Alternative Communication Plan (IS) DEFERRED (26)	IS	December 2015	\$500,000	CIP
Project Rationale: Improve the existing plan that can be implemented immediately should the primary communication infrastructure fails. This Action was deferred from 2007 because the City did not have the funding to undertake it.					
Cost Rationale: Hard costs for this project include equipment and services that can be activated on short notice. Staff time costs are not included, but staff time could range between 25 hours and 100 hours. Staff labor could include tasks such as evaluating available alternatives, contract negotiations, and testing.					

Table 17E, continued

Concord's Mitigation Action Plan 2011: Planning and Implementation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
30	Continue City Requirements for Underground Utilities (CD) DEFERRED (36)	CD	December 1, 2011 - 2016*	Staff Time	In kind staff time in City General Fund/ Annual Operating Budget
Project Rationale: Underground utilities, especially telephone, cable television, and electrical lines, are less likely to fail during significant weather events (ice, snow, wind storms) if lines are buried. They are required in new subdivisions and under roads in non-residential construction. Underground utilities are required in all Districts except Industrial Districts. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur monthly through 2016.					
Cost Rationale: Staff time is minimal as City already has these regulations in place.					
30	Review Material Availability for Ice and Snow Events (GS) DEFERRED (36)	GS	September 1, 2012 - 2016*	Staff Time	General Services Operating Budget
Project Rationale: Adequate supply of snow and ice treatment materials will enhance response time and assure safe and passable roadways. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur annually through 2016.					
Cost Rationale: Staff time costs are not included, but staff time could range between 25 hours and 50 hours annually. Staff labor could include tasks such as material and equipment inventory. There should be no hard costs associated with this project.					
30	Ensure Staff and Equipment Preparedness for Ice, Snow, and Wind Events (GS) DEFERRED (36)	GS	September 1, 2012 - 2016*	Staff Time	General Services Operating Budget
Project Rationale: Proper training for snow, wind and ice treatment will enhance response time and assure safe and passable roadways. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur annually through 2016.					
Cost Rationale: Staff time costs are not included, but staff time could range between 25 hours and 50 hours annually. Staff labor could include tasks such as review of equipment operation, preparedness drills and route assignments. There should be no hard costs associated with this project.					
30	Review and Document Ice, Snow, and Wind Storm Response Procedures (GS) DEFERRED (36)	GS	September 1, 2012 - 2016*	Staff Time	General Services Operating Budget
Project Rationale: Adequate supply of snow and ice treatment methodology will enhance response time and assure safe and passable roadways. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur annually through 2016.					
Cost Rationale: Staff time costs are not included, but staff time could range between 25 hours and 50 hours annually. Staff labor could include tasks such as review of equipment operation, preparedness drills and route assignments. There should be no hard costs associated with this project.					

Table 17E, continued

Concord's Mitigation Action Plan 2011: Planning and Implementation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
30	Develop an Action Plan in Response to a Major Fire (GS) DEFERRED (35)	GS	July 1, 2012 - 2016*	Staff Time	GS Operating Budget
Project Rationale: Continued monitoring of water supply to fight fires, ensuring the preparedness of the water system infrastructure. Test and flush hydrants annually, and main line valves yearly. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur annually through 2016.					
Cost Rationale: Staff time costs are not included, but staff time could range between 25 hours and 50 hours. Staff labor could include tasks such as review of mapping software, equipment serviceability, and command protocol. There should be no hard costs associated with this project.					
30	Utilize Resources of Concord Trailways During an Emergency (PD) DEFERRED (30)	FD	June 2012	\$30,000	FEMA Grants
Project Rationale: The Mass vaccination plan calls for the transportation and possible relocation of large numbers of people during many different types of events. Busing is a key component to accomplishing this task. Part of Emergency Planning Committee's activities. This Action was deferred from 2007 because the City did not have the funding to undertake it.					
Cost Rationale: Hard costs for this project include whatever fees Concord Trailways may charge for the usage of their equipment as well as fuel and personnel costs. Staff time would include time needed to coordinate a Memo of Understanding with them.					
30	Submit a Plan For a Full-Time Position for a Dedicated Emergency Management Director/Coordinator (FD) DEFERRED (30)	EM	December 2015	\$130,000 annually	City General Fund/ Annual Operating Budget
Project Rationale: Demands on first responders to ensure community readiness as part of their homeland security mission and increased demands by the public for rapid and coordinated response to all emergency management incidents dictates that in a community the size of Concord that at least one person should be dedicated to this task. Opportunities for improvement in areas that have been identified multiple times in after-action reports will continue to be missed without a more dedicated and coordinated approach. Missed opportunities to network with sister agencies and participate in information sharing networks will increase the cost to communities in preparedness and recovery from large scale incidents. This Action was deferred from 2007 because the City did not have the funding to undertake it.					
Cost Rationale: Hard costs for this project include salary and benefits for one year, recurring on an annual basis. Staff time costs are not included, but staff time could range between 40 hours and 60 hours. Staff labor could include tasks such as develop the position, recruit, interview, and hire.					

Table 17E, continued

Concord's Mitigation Action Plan 2011: Planning and Implementation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
30	Implement Natural Fire Breaks in Areas of High Concern (FD) DEFERRED (29)	FD	June 2014	\$200,000 annually for about 5 years	Grants
Project Rationale: Emergency motor vehicle access into rural undeveloped areas increases the ability to bring safety services to those who are increasingly using these areas for recreation; and minimizes damage due to ground cover fires by providing fire breaks. Emergency services increasingly respond to these areas due to their increased use. Such access would reduce response times, decreasing costs associated by fire suppression. Project may take up to five years. Areas of concern are widespread. This Action was deferred from 2007 because the City did not have the funding to undertake it.					
Cost Rationale: Hard costs for this project include developing the plan, land acquisition, consulting fees, excavating consultant, upkeep consultant. Staff time costs are not included, but staff time could range between 40 hours and 60 hours, with 20 to 40 hours annually. Staff labor could include tasks such as program management, evaluation, upkeep, maintenance, contract management.					
29	Identify Inaccessible Areas and Develop a Plan for Tanker Access (FD) DEFERRED (34)	FD	December 2011	Staff Time	City General Fund/ Annual Operating Budget
Project Rationale: Emergency motor vehicle access into rural undeveloped areas increases the ability to bring safety services to those who are increasingly using these areas for recreation; and minimizes damage due to ground cover fires by providing fire breaks. Emergency services increasingly respond to these areas due to their increased use. Such access would reduce response times, decreasing costs associated by fire suppression. This Action was deferred from 2007 because the City did not have the staff capability to undertake it.					
Cost Rationale: Staff time could range between 80 hours and 120 hours. Staff labor could include tasks such as site visits, mapping, and planning. There should be no hard costs associated with this project.					
29	Implement Pre-Construction Plan Review Process for Hazardous Materials Plan for All Properties within the Floodplain (TF) DEFERRED (36)	FD	December 2012	Staff Time	City General Fund/ Annual Operating Budget
Project Rationale: This procedural technique will help ensure that new development in the floodplain will include hazardous materials plans which are carefully reviewed prior to approval and construction. The existing Development Review Team intends to implement this process by the end of the year. The Team has already implemented the process for reviewing projects above the aquifer to ensure that hazardous materials will not be absorbed into the ground. This Action was deferred from 2007 because the City did not have the staff capability to undertake it.					
Cost Rationale: Cost is Staff Time since labor is performed in-kind by staff and volunteers.					

Table 17E, continued

Concord's Mitigation Action Plan 2011: Planning and Implementation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
28	Develop a Plan to Improve Radio Coverage City-wide (FD) DEFERRED (36)	FD	June 2012	Staff Time	FD Operating Fund
Project Rationale: Critical to the safety of responders and their ability to efficiently manage an emergency incident is the ability to ensure two way communications at all times. There are areas within the community where two-way communication is not always possible due to terrain and large structures. Inability to communicate increases risks to responders and decreases the ability of responders to provide services to the public. This results in increased morbidity and mortality and property loss. FD has replaced all their radios and brought in consultant to teach a class. Modest changes have occurred to tower network. Hard to obtain 100% because of topography and buildings. Implementing the plan will require additional funding through the CIP for radio upgrades. This Action was deferred from 2007 because the City did not have the staff capability to undertake it.					
Cost Rationale: Hard costs for this project include hardware, software, system design, and implementation. Staff time costs are not included, but staff time could range between 100 hours and 200 hours. Staff labor could include tasks such as testing, program developing, program management, budgetary, testing, and follow through.					
28	Continue Requirements for Planting Groundcover and Tree Breaks in Plan Review Process (CD) DEFERRED (33)	CD	December 2011 - 2016*	Staff Time	City General Fund/ Annual Operating Budget
Project Rationale: Plantings and tree breaks in new development to help reduce the effects of wind damage, provide shade and help reduce cooling costs, prevention of landslides, reduce erosion, and improve the aesthetic appearance of the City. In the Zoning Ordinance, Subdivision Regulations, and Site Plan Review Regulations, there is a construction requirement for revegetation. The largest issue is when people cut into existing stands of trees, which is the greatest wind related problem. Buffers are needed between new homes, and between the treelines and new and existing homes, and between developments for fire protection. All regulations must take into account the possible negative consequences of build out in the urban/rural interface. These regulations would also establish better business practices for development, saving increased costs to the community for future fire protection. Fire Department will be a partner on the project. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur monthly through 2016.					
Cost Rationale: Staff time is minimal as City already has these regulations in place.					
28	Coordinate Increased Security with Concord Airport (PD) DEFERRED (33)	PD	December 2013	\$100,000	CIP
Project Rationale: Concord Airport is a key piece of infrastructure and is attached to the NH National Guard. This airport serves as an air inlet for small planes and military aircraft. Security is somewhat limited with fencing that is not patrolled nor monitored by sensors. Access could be gained to small aircraft.					
Cost Rationale: Hard costs for this project include installation of video monitoring as well as ground monitoring devices.					

Table 17E, continued

Concord's Mitigation Action Plan 2011: Planning and Implementation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
28	Implement an Enterprise Resource System to Support City Services (FD) DEFERRED (30)	Finance	December 2016	\$1.75 million	CIP/Grants
Project Rationale: Procure and implement a Enterprise-wide Resources Planning (ERP) system to provide a fully integrated system to eliminate silos of data that create liabilities for the organization and places ownership of data back into the creator's hands. IS will help to implement. Most is done, will continue working on small modules including Human Resources. . This Action was deferred from 2007 because the City did not have the funding to undertake it.					
Cost Rationale: Hard costs for this project include defining the requirements of the system, evaluating vendors' responses, awarding the contract, implementing the system. Staff time costs are not included, but staff time could range between 10,000 hours and 20,000 hours over two years. Staff labor could include tasks such as Installing, training, administrating and using the system.					
27	Install Backup Power Sources for City Facilities (IS) DEFERRED (35)	GS	December 2015	\$275,000	CIP
Project Rationale: Provide locates that are key to organizations should be supported with backup generators to continue business as usual. . This Action was deferred from 2007 because the City did not have the funding to undertake it.					
Cost Rationale: Hard costs for this project include identifying the specific need and developing an RFP. Staff time costs are not included, but staff time could range between 10 hours and 100 hours. Staff labor would not be required.					
26	Implement a Snow Drift Fencing Program (TF) DEFERRED (36)	GS	September 2012 - 2016*	\$2,000	In kind staff time in City General Fund/ Annual Operating Budget
Project Rationale: Erecting snow drift fences at identified areas will reduce maintenance and increase the safety of roadways, especially for emergency response vehicles. Locations are constantly being reviewed for their eligibility and success. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur annually through 2016.					
Cost Rationale: Staff time could range between 20 hours and 30 hours per season. Staff labor could include tasks such as identifying susceptible roadways, coordinating access to property, and installing fencing. Fences cost \$2,000 annually for additional and replacement fence.					

Table 17E, continued

Concord's Mitigation Action Plan 2011: Planning and Implementation

Priority Score	Action	Who is Responsible	Completed By Date	Approx Cost*	How Funded
25	Require Designation of Snow Storage Areas on Site Plans (CD) DEFERRED (34)	CD	December 2011 - 2016*	Staff Time	CD Operating Budget
Project Rationale: It is important to ensure that development projects provide enough land area for property snow storage in order to protect abutting properties from runoff during spring melt, as well as to ensure property sight distance and traffic circulation on commercial and multifamily properties. This Action was deferred from 2007 because it needs to be repeated at regular intervals in order to be effective. *The Action is anticipated to recur monthly through 2016.					
Cost Rationale: Staff time is minimal as City already has these regulations in place.					
24	Assess the Need for a Plan For Development in Urban Interface Areas (FD) DEFERRED (33)	FD	July 2014	Staff Time	City General Fund/ Annual Operating Budget
Project Rationale: All master plans must take into account the possible negative consequences of build out in the urban/rural interface. This plan would establish better business practices for development, saving increased costs to the community for future fire protection. The area itself is not static, changing all the time. The City is infilling the rural areas. This Action was deferred from 2007 because the City did not have the staff capability to undertake it.					
Cost Rationale: Staff time could range between 40 hours and 60 hours. Staff labor could include tasks such as education, plan development, and plan implementation. There should be no hard costs associated with this project.					

Sources: CHAPTER 9. NEWLY IDENTIFIED MITIGATION ACTIONS, Hazard Mitigation Update Task Force 2011

** The Approximate Cost for each project was a rough estimate agreed upon by the Mitigation Planning Task Force utilizing their various fields of expertise.*

The costs are total approximate costs for the entire project.

Although staff time is considered as in-kind expenses, an estimated number of staff hours are provided to assist City officials with actual administrative costs of the project.

The prioritization exercise helped the Task Force closely evaluate the new hazard mitigation strategies that they had brainstormed throughout the Hazard Mitigation Planning process. While the actions would all help improve the City's disaster responsiveness capability, funding availability and staff time will be a driving factor in determining what and when new mitigation strategies are implemented.

COST TO BENEFIT ANALYSIS

There are **81** Actions within the Hazard Mitigation Action Plan. As indicated in the above table, those Actions which cost the least or impart the highest benefit to residents and businesses are not necessarily the first Actions to be completed. Some Actions that can be accomplished with little time or money (such as increasing the enforcement of regulations) were given a lower priority because they are considered less important than several of the other Actions. In addition, some training and planning efforts, while very helpful, scored low because they do not immediately help reduce potential damage. The highest cost to benefit gained for each Action is again dependent on the chances of a hazard event, the type of hazard, and its severity.

Staff Time (\$0)

Thirty-nine (**39**) Action items listed require only staff time to complete. Staff attempt to complete Actions around the normal work duties they must perform during the course of a day. City staff are public- oriented, and this service requires the majority of their focus. An in-kind staff cost requires no dollar amount (\$) to complete since the activities are funded by the staff person's salary through the respective Department's operating budget. The following Actions may be some of the more largely beneficial based on their capability to positively affect a large number of people:

- Undertake Penacook Lake Dam Monitoring and Maintenance [October 1, 2011]
- Develop NFIP Public Awareness Program and Publicize the Availability of Flood Insurance [May 1, 2012]
- Update the 2005 Emergency Operations Plan [June 2012]
- Develop a Contingency Plan for City Hall Operations [June 2012]
- Ensure Staff and Equipment Preparedness for Ice, Snow, and Wind Events (GS) [September 2012]

\$1 to \$30,000

Twelve (**12**) Actions cost between \$1 and \$30,000 to complete. Several Action Items within this estimated cost range relate to security of facilities, drills, or training. Potential loss of life and property are extremely difficult to predict or place a dollar figure on. However, the following may provide the best cost to benefit relationship within this monetary category based on their capability to positively affect a large number of people:

- Install Security Monitoring System of Water Treatment Facility [January 2013]
- Secure City Hall [June 2013]
- Require NIMS Training for All Key Staff [June 2013]
- Execute Mock Drills for Civil Disturbances [December 2013]

\$30,001 to \$100,000

Nine (9) Actions fall into the \$30,001 to \$100,000 estimated cost range. Several Actions in this cost category involve the increase of security at dams, schools, and other city facilities to lessen the possibility and potential impact of human hazards. Others include stormwater management upgrades or technological Actions. The following Actions may provide the best cost to benefit relationship within this monetary category based on their capability to positively affect a large number of people:

- Maintain Municipal Fire Alarm and Fiber Optic Network [July 1, 2012]
- Update Stormwater Management System at Charles Street and Contoocook River [FY-2013]
- Execute Mock Drills for Technological Disasters [June 2013]
- Install a Surveillance System at City Facilities [December 2020]

\$100,001 to \$500,000

There are eleven (11) Actions listed that are estimated to cost between \$100,001 and \$500,000. Many of these Actions deal with enhancing security, maintaining backup capability, or upgrading the stormwater management infrastructure. A full-time staff position of Emergency Management Director is listed. Potential loss of life and property are extremely difficult to predict or place a dollar figure on. However, the following may provide the best cost to benefit relationship within this monetary category based on their capability to positively affect a large number of people:

- Enhance Security at Unifil Substations (Non-City) [April 2012]
- Devise a Badge System for City Employees [December 2013]
- Maintain Dispatch Software and Hardware to Allow for AVL Capability and Priority Dispatching [December 2013]
- Install Backup Power Sources for City Facilities [December 2015]
- Update Stormwater Management System at Low Area at Borough, Washington, and Fowler Triangle [FY-2016]

Over \$500,000

There are ten (10) Action items listed that will cost over \$500,000. These Actions include involve the installation or upgrade of sprinkler and fire alarm systems in multi-housing complexes, stormwater management upgrades, technology issues, and enhancing the City's Emergency Operations Center. All Actions are large scale and involve major changes to buildings and/or infrastructure. The highest cost to benefit for these Actions is difficult to anticipate, as most of these expenditures are required to keep the City operating in a safe manner. Nonetheless, the following may provide the highest cost to benefit based on their on their capability to positively affect a large number of people:

- Update Stormwater Management System at Concord Heights [FY-2015]
- Enhance or Relocate the City's EOC [December 2015]
- Implement an Updated Fire Alarm System Program at All Multifamily Developments [December 2015]

CHAPTER 11.

PLAN MONITORING, EVALUATING, AND UPDATING

2011 PLAN UPDATE

The City received final FEMA approval for the original Hazard Mitigation Plan in April 2007. The Hazard Mitigation Plan Update Task Force reviewed each of the sections and updated them where necessary. [Tasks of the Plan Update](#) was revised to guide the efforts of the community, and a more comprehensive [IMPLEMENTATION OF THE PLAN](#) section was provided.

INTRODUCTION

The completion of a planning document is merely the first step in its life as an evolving tool. The Hazard Mitigation Plan is a dynamic document which will be reviewed on a regular basis as to its relevancy and usefulness and to add new tasks as old tasks are completed. This Chapter will discuss the methods by which the City of Concord will review, monitor, and update its 2011 Hazard Mitigation Plan.

MAINTENANCE AND UPDATE SCHEDULE OF THE HAZARD MITIGATION PLAN

The City Manager will work with the Emergency Management Coordinator to schedule a series of meetings to update the Hazard Mitigation Plan as part of the budget process cycle in the fall of each year. Strategies, actions, or items identified may be placed into the following fiscal year's budget request. This Task Force will meet quarterly according to the following schedule in [Table 18](#):

Table 18 Hazard Mitigation Planning Task Force Annual Future Meeting Schedule	
Month	Preliminary Agenda
December	Department reports on Action Items status, begin budget requests for first Implementation Action items
March	Department reports on Action Items status, Evaluation of Existing Hazard Mitigation Plan, continue budget requests
June	Begin to update the Hazard Mitigation Plan, Status of Implementation Action items, finalize budget requests
September	Update Hazard Mitigation Plan components

Sources: Hazard Mitigation Update Task Force 2011

The City Manager or designee will invite Department Heads, Board Chairs, and administrative staff to participate in the annual meetings to update the Hazard Mitigation Plan and will place notices in local papers, on the City's website, and will post in public places.

The Hazard Mitigation Plan will be updated annually according to the schedule in [Table 18](#). Funds may be placed into the annual budget for the administrative costs associated with updating the plan such as word processing and map generation, and for printing costs. Funding for any items will be maintained by the City Council.

Tasks of the Plan Update

A number of tasks will be completed for the complete update to the Hazard Mitigation Plan. Note that information from many Chapters will be used or referenced by other Chapters. The **2011 PLAN UPDATE** section of each Chapter will be updated as changes are made.

A yearly, modified update can be undertaken by completing the Chapter 10 tasks, as indicated in [Table 18](#). At least once every five years, the complete update (all 12 Chapters, the Appendix, and the Maps) will be undertaken and provided to FEMA. For the Plan update, the Emergency Management Director and Hazard Mitigation Task Force will follow the Agendas in the **CHAPTER 12. APPENDIX** of this Hazard Mitigation Plan to ensure the Plan update is thoroughly completed.

Acknowledgements.

Add the new Hazard Mitigation Committee members and contributors.

Chapter 1.

Update any available socio-demographic information from Chapter 5. Revise the methodology to reflect the new meetings, tasks, and public notification.

Chapter 2.

Add new disaster events that have affected Concord, and describe the potential future hazards. Add new City special events in [Table 3A](#). Recalculate the probability, severity, and overall risk numbers.

Chapter 3.

Modify the City sites and hazards each is susceptible to in the [Table 4](#) series through the [Table 8](#) series. Update the future development in [Table 9](#). Update traffic and accident information in the [Table 10](#) series.

Chapter 4.

Update the [Table 11](#) series with current building value information and dollar damage ranges per building type for flood hazards. With the revised total building assessment, update the percentage calculations for all natural, technological, and human disasters.

Chapter 5.

Revise the [Table 12](#) series with new demographic, housing, and building permit information as it becomes available. Revise land use data in [Table 12C](#) as it becomes available. The text analysis will need to be revised to reflect all changes.

Chapter 6.

Update the numbers of buildings in the floodplain and flooding information. Update [Table 13](#) series with current flood policy and loss statistics. Revise the repetitive loss discussion as well as the ordinance and community assistance visit discussion as new information becomes available.

Chapter 7.

Revise and update the general and hazard-specific objectives to ensure their continued relevance to the City.

Chapter 8.

Update the [Table 14](#) series with new existing mitigation strategies that are being undertaken. Move completed potential Actions from Chapter 9 to Chapter 8; completed Actions from Chapter 10 will also be added here. Combine the duplicate entries.

Chapter 9.

Add new potential mitigation Actions for the City to undertake in the [Tables 15](#) series. Move the completed potential Actions to Chapter 8.

Chapter 10.

Remove completed Actions from the [Table 17](#) series and place into [Table 16](#). Place completed Actions into Chapter 8 as supporting mitigation strategies. Add newly deleted Actions into [Table 16A](#). Revise the [Table 17](#) series as Actions get addressed. Reevaluate each Action not yet completed utilizing the STAPLEE method, and add new Actions utilizing the STAPLEE method to reprioritize. Modify cost and project rationales as needed, as well as the approximate cost and date for completion. Rewrite the cost to benefit analysis based upon revisions.

Chapter 11.

Modify [Table 18](#) with revised quarterly agendas if needed. Add new information to the Chapter or revise as needed if new information becomes available.

Chapter 12.

Revise the processes or grant information if new information becomes available. Update [Figure 1](#), [Figure 2](#), and [Figure 3](#) if the probability, severity, and overall risks from Chapter 2 were recalculated. Update the Action matrix in [Figure 4](#) whenever Chapter 10 is updated based upon the new projects and priorities. Update the glossary with additional terms as needed. Provide copies of all agendas, meeting summaries, attendance sheets, department support letters, and publicity for inclusion into the Appendix.

Maps. Update [Map 1](#), [Map 2](#), the [Map 3](#) series and the [Map 4](#) series of the Plan as needed to reflect the changes in Chapters 2 and 3.

A modified update can be undertaken by completing the Chapter 10 tasks. At least once every five years, the complete update will be undertaken and provided to FEMA.

IMPLEMENTATION OF THE PLAN THROUGH EXISTING PROGRAMS

In addition to work by the Hazard Mitigation Plan Update Task Force and City Departments, several other mechanisms exist which will ensure that the Hazard Mitigation Plan receives the attention it requires for optimum benefit.

Master Plan

A comprehensive update to the Concord Master Plan was adopted in December , 2008 and is entitled "Master Plan 2030". Implementation of the Master Plan is being undertaken by City Departments and the Planning Board. Recommendations from the Hazard Mitigation Plan will be considered for insertion into the new Master Plan. Recommendations of the Master Plan include reducing the risk of natural, technological, and human hazards.

The Planning Board will consider adopting the Hazard Mitigation Plan as element of its Master Plan in accordance with RSA 674:2.II(e).

Process to Incorporate Actions

The Hazard Mitigation Task Force will present the Hazard Mitigation Plan to the Planning Board in late 2011 after FEMA approval for consideration and adoption into the Master Plan after a duly noticed public hearing, just as any typical Chapter of a Master Plan. A representative of the Task Force will oversee the process to begin working with the Community Development Staff to ensure that the Hazard Mitigation Plan Actions are incorporated into the Master Plan.

Capital Improvements Program

A Capital Improvements Program (CIP) is developed by the City Manager and is adopted by the City Council in Concord on a yearly basis. Priority actions or purchases from the Hazard Mitigation Plan requiring capital expenditures will be submitted by respective Department Heads to the City Manager for consideration for insertion into the Capital Improvements Program depending on the City's current funding ability. A Capital Reserve Fund for Hazard Mitigation Plan Projects may be established to set aside funding for the many projects identified in this Plan as per the available revenue.

Process to Incorporate Actions

The Hazard Mitigation Task Force will oversee the process to begin working with the City Manager to incorporate the various Actions into the yearly CIP. As the CIP is updated on a yearly basis, a representative from the Hazard Mitigation Committee will request to work with the City Manager to ensure the Actions are added.

The highest priority stormwater management projects were incorporated from the CIP into this document as Actions. Dozens more stormwater management projects which will help alleviate possible flooding conditions are awaiting completion and will be undertaken from the City's CIP during the respective fiscal years as the City's budget and current prioritization permit.

Zoning Ordinance and Regulations

Several of the implementation strategies proposed involve revisions to the Subdivision Regulations and/or the Site Plan Review Regulations. The Hazard Mitigation Plan Update Task Force will work with or present recommendations to the Planning Board to develop appropriate language for the modifications.

Process to Incorporate Actions

The Hazard Mitigation Task Force will oversee the process to begin working with the City staff of the Planning Board (Community Development Department) to develop appropriate language for the modifications to regulations or the Zoning Ordinance. A representative from the Hazard Mitigation Committee will request from the Community Development Staff a copy of the required language for any FEMA Zoning Ordinance Updates.

The representative shall also offer to assist the Community Development Staff with drafting language for any respective changes to the Site Plan Review Regulations, or Subdivision Regulations, or the Zoning Ordinance for Actions listed in the Hazard Mitigation Plan requiring such an update. The language shall be presented to the Planning Board for consideration.

Operating Budgets

Many of the Actions will not require specific funding but are identified as needing in-kind Staff labor to perform the work required to undertake the Actions. City Departments and Staff have rigorous job functions that demand their undivided attention to the tasks required to run their respective Departments. Additions to the work load to accommodate the Actions can put a strain on their ability to serve the public during performance of their normal job duties. When possible, Concord Departments and Staff will be able to prioritize their tasks to work on Hazard Mitigation Plan Actions. Any work performed comes out of the operating budget for that particular Department.

Process to Incorporate Actions

The responsible Department Head or Staff position identified in the *Who is Responsible* column of the preceding Tables will work on the Actions allocated to him/her, or delegate the Action to another person, when their normal job duties permit. The funding for the Actions comes out of the Department's operating budget as work is undertaken by the Staff person on an as-time-permits basis unless the Action is a component of the Staffs' normal work duties.

CONTINUED PUBLIC INVOLVEMENT

On behalf of the Hazard Mitigation Plan Update Task Force, the City Manager will be responsible for ensuring that City Departments and the public have adequate opportunity to participate in the planning process. Other administrative staff may be utilized to assist with the public involvement process.

For the quarterly meetings (see [Table 18](#)) and for the yearly update process, techniques that will be utilized for public involvement include:

- Provide personal invitations to Finance Committee members;
- Provide personal invitations to City Department heads and Board Chairs;
- Post notices of meetings at the City Hall, Fire Department, Library, and on the City's website;
- Post notices or descriptions of the project at the City Clerk's Office, Fire Department, Library, and on the City's website; and
- Submit press releases for publication to the Concord Monitor.

Entities to invite to future Hazard Mitigation plan updates include the neighboring communities of Canterbury, Loudon, Pembroke, Bow, Hopkinton, Concord, and Boscawen; Greater Concord Chamber of Commerce; State agencies through the State Emergency Management Director; Concord School District and Merrimack Valley School District; and the NH Center for Non-Profits.

The Hazard Mitigation Plan Update Task Force will ensure that the City website is updated with the Hazard Mitigation meeting notices. A brief summary of the Hazard Mitigation Plan and its process will be posted on the Concord City website which is accessible to residents and visitors at all times. All public meetings of the Mitigation Planning Task Force will be posted on the website. A number of Implementation Action items which will be undertaken related to public education and involvement.

These outreach activities will be undertaken during the Plan's annual review and during two of the four Mitigation Planning Task Force meetings. The remaining two meetings will be reserved for City staff only to permit confidential discussion of the Plan and its sensitive contents.

CHAPTER 12. APPENDIX

2011 PLAN UPDATE

Where identified, new contact information was provided for disaster relief and grant programs. A glossary of acronyms and specialized words was developed to assist the reader identify commonly used terms in this document. The Action Matrix was updated with current prioritization information which was incorporated into **CHAPTER 10. EVALUATION AND IMPLEMENTATION OF ACTIONS.**

INTRODUCTION

The Appendix contains supplemental information to this Hazard Mitigation Plan. The intent of this Plan is to provide information about potential disasters, assets at risk, and a means of implementing the actions to help minimize loss to life and property. In addition, the process by which grant and relief money can be obtained and what programs are available to assist the Town and its residents are equally important. When the Hazard Mitigation Plan process is repeated in 2011 and subsequent years, materials used for publicity and meetings are exhibited to lay out the process for future Hazard Mitigation Committees.

PROCESS FOR DISASTER DECLARATION IN CONCORD

There are two phases to a disaster - first response and recovery. The recovery phase, or clean-up efforts, is where the majority of grant funds could be applied for. Having an approved Hazard Mitigation Plan in place before a disaster occurs, according to the US Disaster Mitigation Act of 2000 and its amendments, is required after November 2004 in order to be eligible to apply for these recovery funds. These grant programs are briefly explained later in this chapter under the **HAZARD MITIGATION ASSISTANCE GRANT PROGRAMS** section. Much of the information following is taken directly from the FEMA website.

FEMA Disaster Information

The Federal Emergency Management Agency (FEMA) has extensive resources related to disaster prevention and disaster recovery on its website at www.fema.gov. The following is an excerpt from their on-line library:

The first response to a disaster is the job of local government's emergency services with help from nearby municipalities, the state and volunteer agencies. In a catastrophic disaster, and if the governor requests, federal resources can be mobilized through the Federal Emergency Management Agency (FEMA) for search and rescue, electrical power, food, water, shelter and other basic human needs.

It is the long-term recovery phase of disaster that places the most severe financial strain on a local or state government. Damage to public facilities and infrastructure, often not insured, can overwhelm even a large city.

A governor's request for a major disaster declaration could mean an infusion of federal funds, but the governor must also commit significant state funds and resources for recovery efforts. A Major Disaster could result from a hurricane, earthquake, flood, tornado or major fire which the President determines warrants supplemental federal aid. The event must be clearly more than state or local governments can handle alone. If declared, funding comes from the President's Disaster Relief Fund, which is managed by FEMA, and disaster aid programs of other participating federal agencies.

A **Presidential Major Disaster Declaration** puts into motion long-term federal recovery programs, some of which are matched by state programs, and designed to help disaster victims, businesses and public entities.

An **Emergency Declaration** is more limited in scope and without the long-term federal recovery programs of a Major Disaster Declaration. Generally, federal assistance and funding are provided to meet a specific emergency need or to help prevent a major disaster from occurring.

The Major Disaster Declaration Process

A Major Disaster Declaration usually follows these steps:

- The Local government responds, supplemented by neighboring communities and volunteer agencies. If overwhelmed, turn to the state for assistance;
- The State responds with state resources, such as the National Guard and state agencies;
- Damage assessment by local, state, federal, and volunteer organizations determines losses and recovery needs;
- A Major Disaster Declaration is requested by the governor, based on the damage assessment, and an agreement to commit state funds and resources to the long-term recovery;
- FEMA evaluates the request and recommends action to the White House based on the disaster, the local community and the state's ability to recover;
- The President approves the request or FEMA informs the governor it has been denied. This decision process could take a few hours or several weeks depending on the nature of the disaster.

Emergency Declaration

An Emergency Declaration can be declared for any occasion or instance when the President determines federal assistance is needed. Emergency Declarations supplement State and local efforts in providing emergency services, such as the protection of lives, property, public health, and safety, or to lessen or avert the threat of a catastrophe in any part of the United States. The total amount of assistance provided for a single emergency may not exceed \$5 million. If this amount is exceeded, the President shall report to Congress.

Disaster Aid Programs

There are two major categories of disaster aid: Individual Assistance is for damage to residences and businesses or personal property losses, and Public Assistance is for repair of infrastructure, public facilities and debris removal.

Individual Assistance

Disaster assistance is money or direct assistance to individuals, families and businesses in an area whose property has been damaged or destroyed and whose losses are not covered by insurance. It is meant to help people with critical expenses that cannot be covered in other ways. This assistance is not intended to restore damaged property to its condition before the disaster.

While some housing assistance funds are available through our Individuals and Households Program, most disaster assistance from the Federal government is in the form of loans administered by the Small Business Administration.

Disaster aid to individuals generally falls into the following categories:

- Disaster Housing is available to individuals in several forms. **Temporary Housing** (a place to live for a limited period of time): Money is available to rent a different place to live, or a government provided housing unit when rental properties are not available. **Repair**: Money is available to homeowners to repair damage from the disaster to their primary residence that is not covered by insurance. The goal is to make the damaged home safe, sanitary, and functional. **Replacement**: Money is available to homeowners to replace their home destroyed in the disaster that is not covered by insurance. The goal is to help the homeowner with the cost of replacing their destroyed home. **Permanent Housing Construction**: Direct assistance or money for the construction of a home. This type of help occurs only in insular areas or remote locations specified by FEMA, where no other type of housing assistance is possible.
- Other than Housing Needs money is available for necessary expenses and serious needs caused by the disaster. This includes: disaster-related medical and dental costs, disaster-related funeral and burial cost, clothing; household items (room furnishings, appliances); tools (specialized or protective clothing and equipment) required for your job; necessary educational materials (computers, school books, supplies), fuels for primary heat source (heating oil, gas), clean-up items (wet/dry vacuum, dehumidifier), disaster damaged vehicle, moving and storage expenses related to the disaster (moving and storing property to avoid additional disaster damage while disaster-related repairs are being made to the home), and other necessary expenses or serious needs as determined by FEMA.
- Other Disaster Aid Programs include crisis counseling, disaster-related unemployment assistance, legal aid, and special tax considerations.

- Low-Interest Disaster Loans are available after a disaster for homeowners and renters from the US Small Business Administration (SBA) to cover uninsured property losses. Loans may be for repair or replacement of homes, automobiles, clothing or other damaged personal property. Loans are also available to businesses for property loss and economic injury.

Visit <http://www.fema.gov/assistance> for more information.

Public Assistance

The objective of the Federal Emergency Management Agency's (FEMA) Public Assistance (PA) Grant Program is to provide assistance to State, Tribal and local governments, and certain types of Private Nonprofit organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President.

Through the PA Program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain Private Non-Profit (PNP) organizations. The PA Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.

The Federal share of assistance is not less than 75% of the eligible cost for emergency measures and permanent restoration. The grantee (usually the State) determines how the non-Federal share (up to 25%) is split with the subgrantees (eligible applicants).

Visit www.fema.gov/government/grant/pa for more information.

HAZARD MITIGATION

Hazard Mitigation is sustained action taken to reduce or eliminate long-term risk to people and their property from hazards and their effects. Mitigation focuses on breaking the cycle of disaster damage, reconstruction, and repeated damage. Mitigation efforts create safer communities and reduce loss of life and property. Mitigation includes such activities as:

- Complying with or exceeding NFIP floodplain management regulations.
- Enforcing stringent building codes, flood-proofing requirements, seismic design standards and wind-bracing requirements for new construction or repairing existing buildings.
- Adopting zoning ordinances that steer development away from areas subject to flooding, storm surge or coastal erosion, or other hazards.
- Retrofitting public buildings to withstand hurricane-strength winds or ground shaking and for installing sprinkler systems for fire events.
- Acquiring damaged homes or businesses in flood-prone areas, relocating the structures, and returning the property to open space, wetlands or recreational uses.
- Building community shelters and tornado safe rooms to help protect people in their homes, public buildings and schools in hurricane- and tornado-prone areas.

Mitigation is achieved through risk analysis, which results in information about a community that provides a foundation for mitigation activities that reduce risk. The goal of risk reduction is to reduce the risk to life and property, which includes existing structures and future construction, in the pre and post-disaster environments. Risk reduction is achieved through regulations, local ordinances, land use and building practices, and mitigation projects that reduce or eliminate long-term risk from hazards and their effects.

For more information, visit www.fema.gov, or contact NH Homeland Security and Emergency Management at (800) 852-3792 or visit www.nh.gov/safety/divisions/hsem.

NATIONAL INCIDENT MANAGEMENT SYSTEM (NIMS)

The National Incident Management System (NIMS) provides a systematic, proactive approach to guide departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work seamlessly to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life and property and harm to the environment. Most State and local governments follow the NIMS protocol for disaster response.

A basic premise of NIMS is that all incidents begin and end locally. NIMS does not take command away from State and local authorities. NIMS simply provides the framework to enhance the ability of responders, including the private sector and NGOs, to work together more effectively. The Federal Government supports State and local authorities when their resources are overwhelmed or anticipated to be overwhelmed. Federal departments and agencies respect the sovereignty and responsibilities of local, tribal, and State governments while rendering assistance. The intention of the Federal Government in these situations is not to command the response, but rather to support the affected local, tribal, and/or State governments.

Elected and appointed officials are responsible for ensuring the public safety and welfare of the people of that jurisdiction. Specifically, these officials provide strategic guidance and resources during preparedness, response, and recovery efforts. Elected or appointed officials must have a clear understanding of their roles and responsibilities for successful emergency management and response. At times, these roles may require providing direction and guidance to constituents during an incident, but their day-to-day activities do not focus on emergency management and response. Their awareness of NIMS is critical to ensuring cooperative response efforts and minimizing the incident impacts.

Preparedness is essential for effective incident and emergency management and involves engaging in a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action to achieve and maintain readiness to respond to emergencies. As such, the NIMS Preparedness Component serves as a baseline concept that links all the NIMS Components. Preparedness spans jurisdictions, governments, agencies and organizations. Though individuals certainly play a critical role in preparedness and are expected to prepare themselves and their families for all types of potential incidents, they are not directly included in NIMS preparedness. NIMS primarily discusses the preparedness role for governments, organizations geared specifically toward preparedness, elected and appointed officials, nongovernmental organizations, and the private sector. NIMS works hand in hand with the National Response Framework (NRF). NIMS provides the template for the management of incidents, while the NRF provides the structure and mechanisms for national-level policy for incident management. Free online courses are available for emergency management officials, first responders, Town staff, Board members, and Town officials. Visit <http://training.fema.gov/IS/NIMS.asp> to take courses.

HAZARD MITIGATION ASSISTANCE GRANT PROGRAMS

Through the NH Homeland Security and Emergency Management (NH HSEM), the Federal Emergency Management Agency provides funds for assistance to municipalities in the event of a disaster through Hazard Mitigation Assistance program. The programs are described briefly here. For more details about these funding sources, contact the NH HSEM or visit the FEMA website at www.fema.gov/government/grant/hma.

Pre-Disaster Mitigation Program (PDM)

The Pre-Disaster Mitigation (PDM) program provides technical and financial assistance to States and local governments for cost-effective pre-disaster hazard mitigation activities that complement a comprehensive mitigation program, and reduce injuries, loss of life, and damage and destruction of property. FEMA provides 75%/25% grants to States and Federally recognized Indian tribal governments that, in turn, provide sub-grants to local governments (to include Indian Tribal governments) for mitigation activities such as planning and the implementation of projects identified through the evaluation of natural hazards.

Flood Mitigation Assistance Program (FMA)

This program requires a 25% match (half in-kind and half local cash) and awards funds for Planning Grants, Technical Assistance Grants, and Project Grants. A Flood Mitigation Plan must be in place before funds can be sought for Technical Assistance or Projects. This program awards funding for Flood Mitigation Plans, structural enhancements, acquisition of buildings or land, and relocation projects.

Hazard Mitigation Grant Program (HMGP)

A disaster must be declared to take advantage of this program, which is designed to protect public and private property from future disasters. This program typically awards funding for projects that are structural in nature or for the acquisition of buildings or land. It covers the broadest range of mitigation project activities. The funding award is 75% with a 25% match.

For more information, for a listing of criteria, or to request an application to these or any other grant programs, please contact the NH Homeland Security and Emergency Management at (800) 852-3792 or at www.nh.gov/safety/divisions/hsem.

Repetitive Flood Claims (RFC)

Repetitive Flood Claims provides funding to States and communities to reduce or eliminate the long-term risk of flood damage to structures insured under the NFIP that have had one or more claims for flood damages, and that can not meet the requirements of the Flood Mitigation Assistance (FMA) program for either cost share or capacity to manage the activities. The grant pays for 100% of the cost.

Severe Repetitive Loss (SRL)

Severe Repetitive Loss (SRL) funds provides funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the National Flood Insurance Program (NFIP). Projects include property acquisition and structure demolition and relocation, structure elevation, and minor localized flood reduction projects. A 75/25% match is required.

Community Development Block Grant (CDBG)

A disaster must be declared to take advantage of this program, which awards emergency funds to cover unmet needs in a community. At least one of three national objectives must be met: the funds must have a direct benefit to low and moderate income persons; or must prevent or eliminate slums and blight in neighborhoods; or must eliminate conditions which threaten the public health and welfare. The NH Community Development Finance Authority (CDFA) administers this program. The CDBG website is www.nhcdfa.org/web/cdbg/cdbg_overview.

NATURAL, TECHNOLOGICAL, AND HUMAN HAZARD VULNERABILITY SCORING

The following figures are used in **CHAPTER 2. HAZARD IDENTIFICATION** to determine the probability, severity, and overall risk of each of the 39 hazards presented in the Hazard Mitigation Plan. The exercise was completed by the Hazard Mitigation Update Task Force during a Work Session.

Figure 1
Natural Hazard Vulnerability Matrix

Natural Hazard Event	Probability	Human Impact	Property Impact	Business Impact	Severity	Overall Risk
Concord, 2011	<u>Likelihood hazard will occur in 25 years</u> 0=NA 1=Low 2=Moderate 3=High	<u>Severity of death or injury in 25 years</u> 0=NA 1=Low 2=Moderate 3=High	<u>Severity of physical losses and damages in 25 years</u> 0=NA 1=Low 2=Moderate 3=High	<u>Severity of interruption of service in 25 years</u> 0=NA 1=Low 2=Moderate 3=High	<u>Avg. of Human + Property + Business</u> 1=Low (<1.6) 2=Moderate (1.6-2.5) 3=High (>2.5)	(Relative Threat) Severity x Probability
Flooding	3	3	3	2	2.67	8.00
Hurricanes and Severe Storms	3	1	2	2	1.67	5.00
Rapid Snow Pack Melt	1	1	1	1	1.00	1.00
River Ice Jams	2	1	1	1	1.00	2.00
Dam Breach and Failure	1	1	2	2	1.67	1.67
Stream Bank Erosion and Scouring	2	1	2	2	1.67	3.33
Debris Impacted Infrastructure	2	1	2	2	1.67	3.33
Tornadoes	1	2	3	3	2.67	2.67
Downbursts	2	1	2	2	1.67	3.33
Lightning	3	1	1	1	1.00	3.00
Wildfire	1	1	1	1	1.00	1.00
Severe Winter Weather	3	2	2	2	2.00	6.00
Earthquake	2	1	1	1	1.00	2.00
Landslide	1	1	1	1	1.00	1.00
Drought	2	2	1	2	1.67	3.33
Radon	2	1	2	2	1.67	3.33
Biological	3	2	1	2	1.67	5.00

Sources: **CHAPTER 2. HAZARD IDENTIFICATION**, Hazard Mitigation Update Task Force 2011

Figure 2
Technological Hazard Vulnerability Matrix

Technological Hazard Event	Probability	Human Impact	Property Impact	Business Impact	Severity	Overall Risk
Concord, 2011	<u>Likelihood hazard will occur in 25 years</u>	<u>Severity of death or injury in 25 years</u>	<u>Severity of physical losses and damages in 25 years</u>	<u>Severity of interruption of service in 25 years</u>	<u>Avg. of Human + Property + Business</u>	(Relative Threat) Severity x Probability
	0=NA	0=NA	0=NA	0=NA	1=Low (<1.6)	
	1=Low	1=Low	1=Low	1=Low	2=Moderate (1.6-2.5)	
	2=Moderate	2=Moderate	2=Moderate	2=Moderate	3=High (>2.5)	
	3=High	3=High	3=High	3=High	3=High (>2.5)	
Hazardous Materials	3	1	1	1	1.00	3.00
Explosion/Fire	3	1	1	1	1.00	3.00
Transportation Accident	3	1	1	1	1.00	3.00
Building/Structure Collapse	2	1	2	1	1.33	2.67
Power/Utility Failure	3	1	1	2	1.33	4.00
Extreme Air Pollution	1	1	1	1	1.00	1.00
Radiological Accident	1	1	1	1	1.00	1.00
Fuel/Resource Shortage	2	1	1	2	1.33	2.67
Strike	2	1	1	2	1.33	2.67
Business Interruption	1	1	1	1	1.00	1.00
Financial Issues, Economic Depression, Inflation, Financial System Collapse	3	1	1	2	1.33	4.00
Communications Systems Interruptions	3	1	1	1	1.00	3.00

Sources: CHAPTER 2. HAZARD IDENTIFICATION, Hazard Mitigation Update Task Force 2011

Figure 3
Human Hazard Vulnerability Matrix

Human Hazard Event	Probability	Human Impact	Property Impact	Business Impact	Severity	Overall Risk
Concord, 2011	<u>Likelihood hazard will occur in 25 years</u>	<u>Severity of death or injury in 25 years</u>	<u>Severity of physical losses and damages in 25 years</u>	<u>Severity of interruption of service in 25 years</u>	<u>Avg. of Human + Property + Business</u>	(Relative Threat) Severity x Probability
	0=NA	0=NA	0=NA	0=NA	1=Low (<1.6)	
	1=Low	1=Low	1=Low	1=Low	2=Moderate (1.6-2.5)	
	2=Moderate	2=Moderate	2=Moderate	2=Moderate	3=High (>2.5)	
	3=High	3=High	3=High	3=High	3=High (>2.5)	
Economic Threats	2	1	1	2	1.33	2.67
General Strike	1	1	1	2	1.33	1.33
Terrorism	2	1	1	2	1.33	2.67
Sabotage	2	1	1	2	1.33	2.67
Hostage Situation	2	1	1	1	1.00	2.00
Civil Disturbance / Public Unrest	2	1	1	1	1.00	2.00
Enemy Attack	1	1	1	1	1.00	1.00
Arson	3	1	2	2	1.67	5.00
Mass Hysteria	2	1	1	2	1.33	2.67
Special Events	2	1	1	2	1.33	2.67

Sources: CHAPTER 2. HAZARD IDENTIFICATION, Hazard Mitigation Update Task Force 2011

ACTION EVALUATION AND PRIORITIZATION SCORING

Figure 4 displays the ranking to each of the potential strategies as displayed in Tables 17A - 17E in CHAPTER 10. EVALUATION AND IMPLEMENTATION OF ACTIONS. The ranking was completed by the Hazard Mitigation Update Task Force during a 2011 Work Session.

Figure 4
Action Evaluation and Prioritization Matrix

Concord, 2011	Vote of Committee required to accept the following Ranking Criteria												
	As a group, rank each of the following Actions according to the following criteria:												
	3 = Good	2 = Average	1 = Poor										
Action	Reduce damage?	Contribute to City objectives?	Meet Regulation objectives?	Protect sensitive structure	Implemented quickly?	Socially Acceptable	Technically Feasible?	Administratively Realistic?	Politically Acceptable?	Legal?	Reasonable Cost to Benefits?	Environmentally Sound?	Total Score
Encourage Continued Floodplain Regulation (CD)	3	3	3	3	3	3	3	3	3	3	3	3	36
Maintain Building Codes to Reduce Wind Load Damage (CD)	3	3	3	3	3	3	3	3	3	3	3	3	36
Continue to Maintain Zoning Setback Regulations for Tall Structures (CD)	2	3	3	2	3	2	3	3	2	3	2	2	30
Upgrade Radio System in Merrimack Valley High School (Non-City) (PD)	2	2	2	1	2	2	3	3	2	2	2	3	26
Enhance Security to Concord High School (Non-City) (PD)	3	3	3	3	3	3	3	3	3	3	2	3	35
Secure City Hall (PD)	3	3	3	3	3	3	3	3	3	3	3	3	36
Install Security Monitoring System of Water Treatment Facility (PD)	3	3	3	3	3	3	3	3	3	3	3	3	36
Install and Monitor Security Monitoring System of Waste Water Treatment Facility	3	3	3	3	3	3	3	3	3	3	3	3	36
Install a Surveillance System at City Facilities (IS)	3	3	3	3	2	3	2	3	3	3	3	3	34
Develop a Sprinkler Ordinance for the Conflagration Areas (PD)	3	3	3	3	2	1	3	2	1	3	3	3	30
Enhance Security at Memorial Field (PD)	3	3	3	2	2	3	3	3	3	3	2	3	33
Improve Building Security of Beaver Meadow Golf Course (Non-City) (GS)	3	3	3	3	2	3	3	2	3	3	3	2	33
Enhance Security at Unit Substations (Non-City) (PD)	3	3	3	3	2	3	2	2	3	3	2	3	32
Update Stormwater Management System at Bow Brook and South Street and Sunset Avenue (GS)	3	3	3	2	1	2	3	2	2	3	2	3	29
Update Stormwater Management System at Concord Heights (GS)	3	3	3	2	1	2	3	2	2	3	2	3	29
Update Stormwater Management System at Ormond St, Christian Ave, Oriole Rd, East Side Dr and Partridge Rd (GS)	3	3	3	2	1	2	3	2	2	3	2	3	29
Update Stormwater Management System at West Sugarball Road to Outfall on Merrimack River (GS)	3	3	3	2	1	2	3	2	2	3	2	3	29
Update Stormwater Management System at Concord Hospital, South of Redington Road/West of Fruit Street (GS)	3	3	3	2	1	2	3	2	2	3	2	3	29
Update Stormwater Management System at Charles Street and Contocook River (GS)	3	3	3	2	1	2	3	2	2	3	2	3	29
Update Stormwater Management System at Pleasant Street and Miller's Brook (GS)	3	3	3	2	1	2	3	2	2	3	2	3	29
Update Stormwater Management System at Merrimack Street and Bye Street (GS)	3	3	3	2	1	2	3	2	2	3	2	3	29
Update Stormwater Management System at Tanner Street and Village Street (Penacook) (GS)	3	3	3	2	1	2	3	2	2	3	2	3	29
Update Stormwater Management System at Noyes Street near Harvard Street (GS)	3	3	3	2	1	2	3	2	2	3	2	3	29
Update Stormwater Management System at Rumford Street between Penacook Street and Jennings Street (GS)	3	3	3	2	1	2	3	2	2	3	2	3	29
Update Stormwater Management System at Low Area at Borough, Washington and Fowler Triangle (GS)	3	3	3	2	1	2	3	2	2	3	2	3	29
Update the Zoning Ordinance to Comply with NFIP Requirements (CD)	3	3	3	3	3	3	3	3	3	3	3	3	36
Undertake Roadway Monitoring and Maintenance Caused by City Dams (GS)	3	3	3	2	2	3	2	3	3	3	3	3	33
Undertake Penacook Lake Dam Monitoring and Maintenance (GS)	3	3	3	3	3	3	3	3	3	3	3	3	36
Increase Direct Communications Among Departments and Non-City Entities (FD)	3	3	3	2	3	3	3	3	3	3	3	3	35
Enhance Security System of Police Headquarters (PD)	3	3	3	3	3	3	3	3	3	3	3	3	36
Maintain Municipal Fire Alarm and Fiber Optic Network (FD)	3	3	3	2	3	3	3	3	3	3	3	3	35
Maintain Dispatch Software and Hardware to Allow For AVL Capability and Priority Dispatching (FD)	2	2	2	2	2	3	3	3	2	3	2	3	29

Figure 4, continued
Action Evaluation and Prioritization Matrix

Concord, 2011													
Vote of Committee required to accept the following Ranking Criteria: As a group, rank each of the following Actions according to the following criteria:													
Action	Reduce Damage?	Contribute to City objectives?	Meet Regulation is?	Protect sensitive structure?	Implement ed quickly?	Socially Acceptab le	Technical ly Feasible?	Administra tively Realistic?	Politically Acceptabl e?	Legal?	Reasonabl e Cost to Benefit?	Environ- mentally Sound?	Total Score
Develop NFIP Public Awareness Program and Publicize the Availability of Flood Insurance (TF)	2	3	3	1	1	3	2	1	2	3	1	3	25
Require Incident Command System (ICS) Training for City Personnel (PD)	3	3	3	3	3	3	3	3	3	3	3	3	36
Conduct Hazardous Materials Operations Training for All City Departments (FD)	2	2	3	2	2	3	2	2	3	3	2	3	29
Develop Policies for Ensuring Our State of Storm Readiness (FD)	2	3	3	2	3	3	3	3	3	3	3	3	34
Maintain GIS Software to Utilize Hazard Mitigation Maps in Emergency Response Vehicles (TF)	2	3	3	3	2	3	2	3	3	3	2	3	32
Execute Mock Drills for Technological Disasters (IS)	2	3	3	2	2	3	3	2	3	3	3	3	32
Develop Coordinated Response to NH Military Reservation Emergencies (PD)	3	3	3	3	2	3	2	2	3	3	2	3	32
Execute Mock Drills for Civil Disturbances (PD)	3	3	3	3	3	3	3	3	3	3	3	3	36
Develop Coordinated Response to NH State Prison Disturbance (PD)	2	2	2	2	2	2	2	2	2	2	2	2	24
Provide Ongoing GIS Training (CD-GIS)	2	2	2	2	2	2	2	1	2	2	2	2	23
Require NIMS Training for All Key Staff (GS)	3	3	3	2	2	3	3	2	3	3	2	3	32
Participate in NFIP Training (CD)	1	3	3	1	2	2	2	3	1	3	1	3	25
Undertake More Tabletop Exercises (FD)	2	3	3	2	2	3	3	3	3	3	3	3	33
Continue City Requirements for Underground Utilities (CD)	3	3	3	2	2	2	3	3	2	3	2	2	30
Update GIS Critical Facilities Layer (CD-GIS)	2	3	3	3	2	3	3	3	3	3	2	2	32
Maintain Road and Driveway Slope Standards (CD)	3	3	3	2	3	2	3	3	2	3	3	3	33
Adopt the Capital Area Public Health Plan and Mass Vaccination Plan (TF)	3	3	3	1	2	3	2	2	3	3	3	3	31
Implement a Snow Drift Fencing Program (TF)	3	3	2	2	2	2	2	2	2	2	2	2	26
Develop and Implement a Response Plan for Special Operations Incidents (FD)	3	3	3	3	3	3	3	3	3	3	3	3	36
Devise Badge System for City Facilities (IS)	2	3	3	3	2	3	2	3	3	3	2	3	32
Review Material Availability for Ice and Snow Events (GS)	2	3	3	2	2	3	3	2	2	3	2	3	30
Ensure Staff and Equipment Preparedness for Ice, Snow, and Wind Events (GS)	2	3	3	2	2	3	3	2	2	3	2	3	30
Review and Document Ice, Snow, and Wind Storm Response Procedures (GS)	2	3	3	2	2	3	3	2	2	3	2	3	30
Develop a Plan to Improve Radio Coverage City-wide (FD)	2	2	2	2	2	3	2	2	3	3	2	3	28
Develop an Action Plan in Response to a Major Fire (GS)	2	3	3	2	2	3	3	2	2	3	2	3	30
Install Backup Power Sources for City Facilities (IS)	2	3	2	2	1	3	3	2	3	3	1	2	27
Implement a Sprinkler Program at Concord and Royal Gardens (FD)	3	3	3	2	2	2	3	2	3	3	3	3	32
Require Designation of Snow Storage Areas on Site Plans (CD)	2	2	2	1	2	2	2	2	2	3	2	3	25
Develop a Plan to Protect City Clerk's Records (TF)	3	3	3	3	2	3	2	2	3	3	2	3	32
Identify Inaccessible Areas and Develop a Plan for Tanker Access (FD)	2	2	2	2	2	3	3	2	3	3	2	3	29
Assess the Need for a Plan for Development in Urban Interface Areas (FD)	2	2	3	2	2	1	2	2	1	3	2	2	24
Continue Requirements for Planting Groundcover and Tree Breaks in Plan Review Process (CD)	2	3	3	1	2	2	3	2	2	3	2	3	28
Enhance or Relocate the City's EOC (FD)	2	3	3	2	2	3	3	2	3	3	2	3	31
Coordinate Increased Security with Concord Airport (FD)	2	2	2	3	2	3	2	2	3	2	2	3	28
Implement Pre-Construction Plan Review Process for Hazardous Materials Plan for All Properties within the Floodplain (TF)	3	3	3	2	2	2	2	2	2	3	2	3	29
Maintain a Contingency Plan for City Hall Operations (TF)	2	3	3	2	2	3	3	2	3	3	2	3	31
Utilize Resources of Concord Trailways During an Emergency (PD)	3	2	2	2	2	3	2	2	3	3	3	3	30
Submit a Plan for a Full-Time Position for a Dedicated Emergency Management Director/Coordinator (FD)	2	3	3	2	2	2	3	2	2	3	3	3	30
Implement an Enterprise Resource System to Support City Services (FD)	2	3	2	2	2	3	3	2	2	2	2	3	28
Implement an Updated Fire Alarm System Program at All Multifamily Developments (FD)	3	3	3	3	2	2	3	2	2	3	3	3	32
Implement Natural Fire Breaks in Areas of High Concern (FD)	2	2	3	3	2	2	3	2	3	3	2	3	30
Improve an Alternative Communication Plan (IS)	2	3	3	2	2	3	3	2	3	3	2	3	31
Develop Windstorm Preparation Procedures (GS)	2	3	3	2	2	3	3	2	3	3	3	3	32
Develop a Plan to Protect the Library's Data and Resources (TF)	2	3	3	2	2	3	2	2	2	3	2	3	29
Update the 2005 Emergency Operations Plan (FD)	3	3	3	2	2	3	3	2	3	3	3	3	33
Update General Orders for Procedures as Needed (PD)	2	3	3	2	2	3	2	3	3	3	3	3	32

GLOSSARY OF TERMS

The Concord Hazard Mitigation Plan utilizes numerous terms throughout the document to refer concepts and ideas surrounding hazards of all types. A selection of the more commonly used, or easily confused, terms and acronyms have been defined for the user of this Plan.

100 Year Flood - A flood event which has a one percent (1%) chance of occurring in a given year

Accessory Building - A structure which is detached from the principal building and located on the same lot, which is incidental to the principal building or use such as a shed, barn, garage, etc.

Action - A strategy which fulfills an objective

Central New Hampshire Regional Planning Commission (CNHRPC) - A non-profit voluntary organization of municipalities which is staffed by professional planning and support personnel. CNHRPC has 20 member communities.

Disaster Mitigation Act (DMA) - Enacted in 2000, it requires states and municipalities to have local natural hazard mitigation plans in place in order to be eligible for disaster funding programs

Federal Emergency Management Agency (FEMA) - Agency of the United States Government tasked with disaster mitigation, preparedness, response and recovery planning

Flood - Temporary overflowing of water onto land which is usually devoid of surface water

Flood Insurance Rate Map (FIRM) - The official map on which the Federal Insurance Administration has identified both the areas of special flood hazards and the risk premium zones for a community

Flood Mitigation Assistance Program (FMA) - Awards funding for Flood Mitigation Plans, structural enhancements, acquisition of buildings or land, and relocation projects.

Floodplain - The relatively flat area adjacent to a channel of a natural stream or river which either has been or may be covered by flood water

Geographic Information Systems (GIS) - A technology that manages, analyzes and disperses geographic knowledge

Goal - A broad statement of intent

Hazard Mitigation - means any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards. These long-term strategies include planning, policy changes, programs, projects and other activities.

Hazard Mitigation Grant Program (HMGP) - Broad range of mitigation project activities are covered, although are typically structural in nature or for the acquisition of buildings or land. Can only be available after a disaster is declared. Designed to protect public and private property from future disasters.

Hazard Mitigation Planning - A collaborative process identifying hazards affecting a community, assessing vulnerability to those hazards, and reaching consensus on how to minimize or eliminate the effects of those hazards.

HAZUS-MH - Software program developed by the Federal Emergency Management Agency to be used for risk assessment and estimation of hazard related damage

Human Hazard - Hazards caused by human circumstances, such as terrorism, hostage situations, civil unrest, mass hysteria, riots, etc.

Information Technology - The use of computers in order to process, store, transmit, etc. information from anywhere at any time

Infrastructure - Facilities and services needed to sustain everyday land-use activities, such as telephone wires, roads, power lines, etc.

Manufactured Homes - Factory-built, single-family structures, commonly referred to as "mobile homes"

Manufactured Housing Parks - An area where space for two or more manufactured homes is rented

Multi-Unit Housing - Structures containing three or more housing units, such as apartment buildings and condos

National Incident Management System (NIMS) - Provides a standardized approach toward incident management that can be used for any scale disaster events

New Hampshire Homeland Security Emergency Management (NHHSEM) - Established in order to protect the lives, property and environment of the people of New Hampshire from the threat or occurrence of emergencies resulting from any natural or man-made disaster

National Flood Insurance Program (NFIP) - Created in 1968, NFIP is a Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages

Natural Hazard - Hazards caused by the natural environment such as drought, flooding, hurricane, tornado, severe winter weather, biological event, etc.

Objective - Specific explanation of the broad goal

Pre-Disaster Mitigation Program (PDM) - Provides technical and financial assistance to States and local governments for pre-disaster hazard mitigation activities that complement a comprehensive mitigation program, and reduce injuries, loss of life, and damage and destruction of property.

Property - A collection of land, buildings and vehicles of which someone can claim ownership

Risk Rating - An adjective description (High, Medium, or Low) of the overall threat poses by a hazard over the next 25 years. It is a subjective estimate of the combination of probability of occurrence and vulnerability.

Richter Magnitude Scale - A base-10 logarithmic scale which assigns a single number to quantify the size of an earthquake

Technological Hazard - Hazards caused by problems with technology such as power/utility failure, radiological accident, dam/levee failure, fuel/resource shortage, hazardous material release, etc.

USACE - United States Army Corps of Engineers

PHOTOGRAPHS OF CONCORD DISASTERS

Many photos of disasters were located during research of this Plan. They were provided by the Concord Public Library and the General Services Department. A few were selected for incorporation into this Plan.



Contoocook River Flood in Penacook, April 1895
Courtesy of Concord Public Library



Merrimack River Flood on Ferry Street, April 1895
Courtesy of Concord Public Library



Spring Flood near Rumford Press, 1922
Courtesy of Concord Public Library



Merrimack River Flood at East Concord Bridge, November 1927
Courtesy of Concord Public Library



Merrimack River Flood, November 1927
Courtesy of Concord Public Library



Merrimack River Flood, November 1927
Courtesy of Concord Public Library



B&M Railroad Track South of Sewalls Falls, March 1936
Photo from "Raging Rivers" by the WPA, March 1936



Merrimack River Flood Impacting the Hooksett Bridge, March 1936
Photo from "Raging Rivers" by the WPA, March 1936



Merrimack River Flooding at Water Street, March 1936
Courtesy of Concord Public Library



Merrimack River Flood looking from Rumford Press Building, March 19, 1936
Courtesy of Concord Public Library



Hurricane Damage at Rollins Park, 1938
Courtesy of Concord Public Library



Rumford Press Fire, Date Unknown (circa 1930-1940)
Courtesy of Concord Public Library



Merrimack River Flood along I-93 South, circa 1960
Courtesy of Concord Public Library



Merrimack River Flood at NH Highway Hotel on Fort Eddy Road, circa 1960
Courtesy of Concord Public Library



Merrimack River Flood at Green Acres MHP on Fort Eddy Road, circa 1960
Courtesy of Concord Public Library



White's Opera House Fire, November 30, 1920
Courtesy of Fire Department



Tree struck by Lightning on Oak Hill Road, 2005
Courtesy of General Services



Cemetery Street Windblown Trees, Circa 2003
Courtesy of General Services



West Sugarball Road Washout, 2005
Courtesy of General Services



West Sugarball Road Washout, 2005
Courtesy of General Services



Hoit Road Culvert Pipe Collapse, 2003
Courtesy of General Services



Hoit Road Culvert Pipe Collapse, 2003
Courtesy of General Services



North State Street Washout from Flood, May 2006
Courtesy of Fire Department



St. Paul's School Flooding, May 2006
Courtesy of Fire Department



St. Paul's School Flooding, May 2006
Courtesy of Fire Department



Iron Works Road Flooding, May 2006
Courtesy of Fire Department



Mill Place West Apartments Flooding, May 2006
Courtesy of Fire Department



Movie Gallery Flooding, May 2006
Courtesy of Fire Department



Fisherville Road Flooding Aftermath, May 2006
Courtesy of Fire Department



St. Paul's School Flooding Aftermath, May 2006
Courtesy of Fire Department



Friendly's Restaurant Fire on Loudon Road, October 3, 2009
Courtesy of Fire Department



Langdon Street Fire, July 15, 2009
Courtesy of Fire Department



Building Collapse on Elm Street, January 2008
Courtesy of Fire Department



Train Rollover near Grappone Conference Center, February 2011
Courtesy of Fire Department



Iron Works Road Flooding, April 2007
Courtesy of Fire Department



Downed Trees and Powerlines on Bog Road east of River Road, February 2010 Windstorm
Courtesy of Fire Department



Downed Trees on Elm Street, February 2010 Windstorm
Courtesy of Fire Department



Hazardous Materials Training
Courtesy of Fire Department

LIST OF 2006 FLOOD DAMAGED LOCATIONS

About 60 specific locations were damaged in the Mother's Day flooding event on May 14, 2006. The information was provided by the City's Engineering and Planning Department. This list is summarized in [Table 19](#):

Table 19
May 2006 Flood Damaged Locations

Street	Location	Description of Damage
Appleton St	Dam	Washout at embankment
Auburn St	Water Tank Rd	Road washout
Birchdale Rd	At bridge	Shoulder washed out at bridge
Blackwater Rd		Shoulder
Blackwater Rd	Junction of Warner & Horse Hill Rd	Shoulder
Bog Rd		Shoulder and pavement wash and undermining
Bog Rd		Railroad bed at culvert washed away
Bow St	At Carter St	Channel inlet washout
Broadcove Dr		Culvert road and sub grade
Broadcove Dr		Shoulder and pavement
Broadcove Dr		Shoulder
Clinton St	Culvert Crossing	Culvert/roadway flooding
District #5 Rd		Shoulder washed out
Dunbarton Rd	2 Locations	Shoulder/curbing/road
Eastman St		Channel washout under building
Elm St		Shoulder and roadway washout
Elm St	2 Locations	Shoulder and swale washout by culvert
Elm St		Shoulder & roadway washout
Flume St		C/B collapsed & edge of road and reset
Franklin St	West of Liberty St	
Hall St	Under I-93 Overpass	C/B collapsed
Hooksett Tpke		Shoulder and road washed out
Horse Hill Rd		Culvert surcharged road washed
Hutchins St	Garrison Park	Pool pump house flooded/pool deck undermined/walkway washout
Iron Works Rd	2 Locations	Road washed out by culvert. Shoulder washed just west of road wash out.
Joshia Bartlett Rd		Shoulder washed out by Cemetery Brook
Joshia Bartlett Rd		Shoulder and road washed out
Lakeview Dr		Shoulder washed both side of District # 5
Library Rd	SPS	Dam/pond overflow/damage to buildings
Loop Rd		Culvert washout & header

Table 19, continued
May 2006 Flood Damaged Locations

Street	Location	Description of Damage
N State St		Area washed out in front of homeowners sidewalk
N State St	At Woods Brook behind 20 Perkins Ct	Railroad bed and box culvert washed
N State St	Behind Prison Farm	Culvert washout
N State St		Roadway washed out
N State St	2 Locations	Bank erosion behind homeowner
N State St		Washout and C header
N State St		Granite channel washout/building damage
OakHill Rd		Shoulder washed out by Potter Farm
Pleasant St		Box culvert road and sidewalk collapse
Portsmouth St	At Conservation Center	Edge of road by culvert
Quaker St		Granite channel washout/building damage
Runnells Rd	River side before turnaround shoulder	
S Curtisville Rd		Entire Rd at culvert
Sanborn Rd		Shoulder washed out
School St		Road and pipe drain washed out
Shaker Rd	Before Hoit Rd	Mud slide by walking trail. Shoulder by culvert
Shaker Rd	By walking trail	mud slide
Stickney Hill Rd		Shoulder washed out
Warren St	At Westbourne Rd	Box culvert road and sidewalk collapse
Warren St	CHS Channel Relocation	Channel conduit washout
West Parish Rd	At Lakeview Dr	Culvert collapsed repaired for use, new culvert to be installed

Source: Planning and Engineering Department, 2011

PUBLICITY AND MEETING INFORMATION FOR THE CONCORD 2011 HAZARD MITIGATION PLAN

To better assist future Hazard Mitigation Committee updates of this Plan, exhibited are the following materials which enabled the Committee to effectively produce this document. Four Committee meetings, four Work Session meetings, and a Public Information Meeting were held. The publicity materials for the Plan adoption are included.

From each of the Meetings, where available:

- Press release (press releases often covered more than one meeting)
- Copies of press release in the newspapers if available
- Flyer (flyers often covered more than one meeting)
- Agenda
- Attendance sheet
- Meeting summary

The following additional documentation is exhibited:

- Invitation to abutting communities, businesses, School District
- Support letters from Department heads, Board Chairs, and emergency first responders
- Approvable Pending Adoption (APA) notification to City, 11-28-11